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Volume 5 No. 11 November 1990
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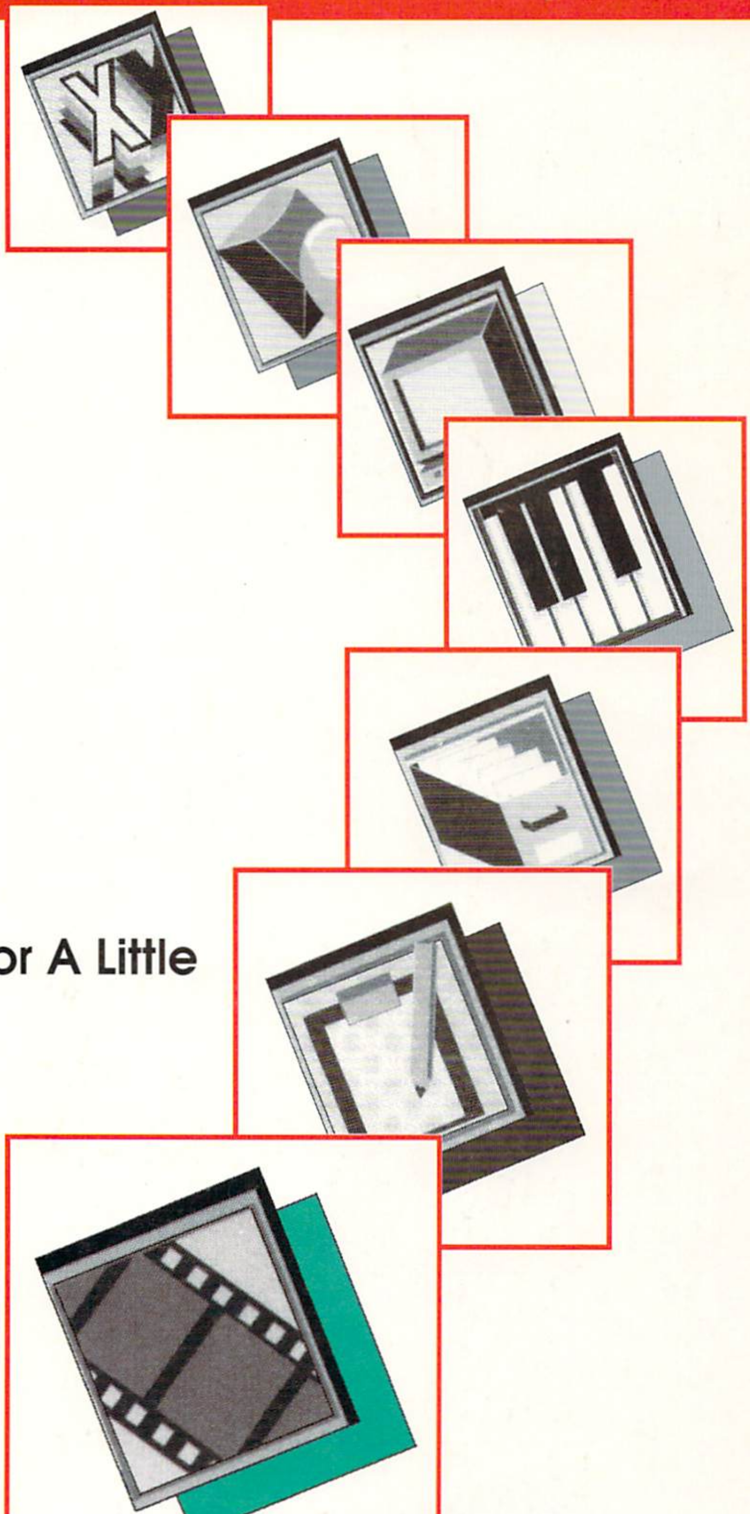

- AE's High-Density Drive
- Pulsar's KCS Power PC Board
- MicroWay's flickerFixer
- SAS/C Compiler
- excellence! 2.0

Plus!

- Compression: Getting A Lot For A Little
- Video Expo New York

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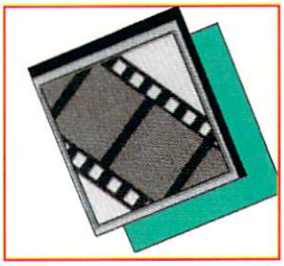

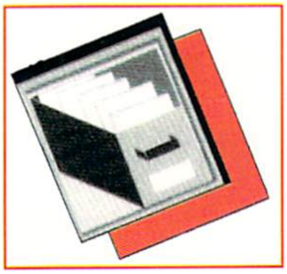

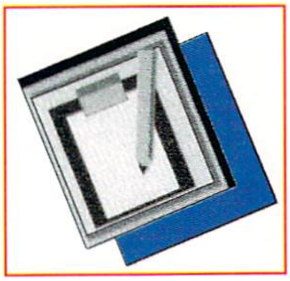

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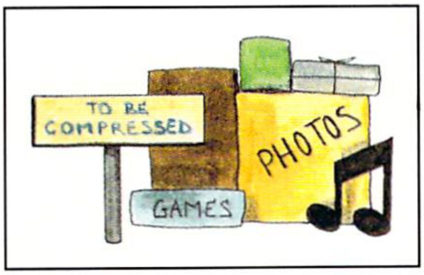

An easy way to organize programs and save on disk space: Getting A Lot For A Little, on page 48.

Cover by
Ernest P. Viveiros, Sr.

Amazing COMPUTING For The Commodore AMIGA

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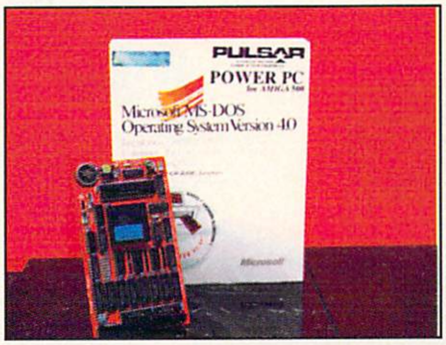

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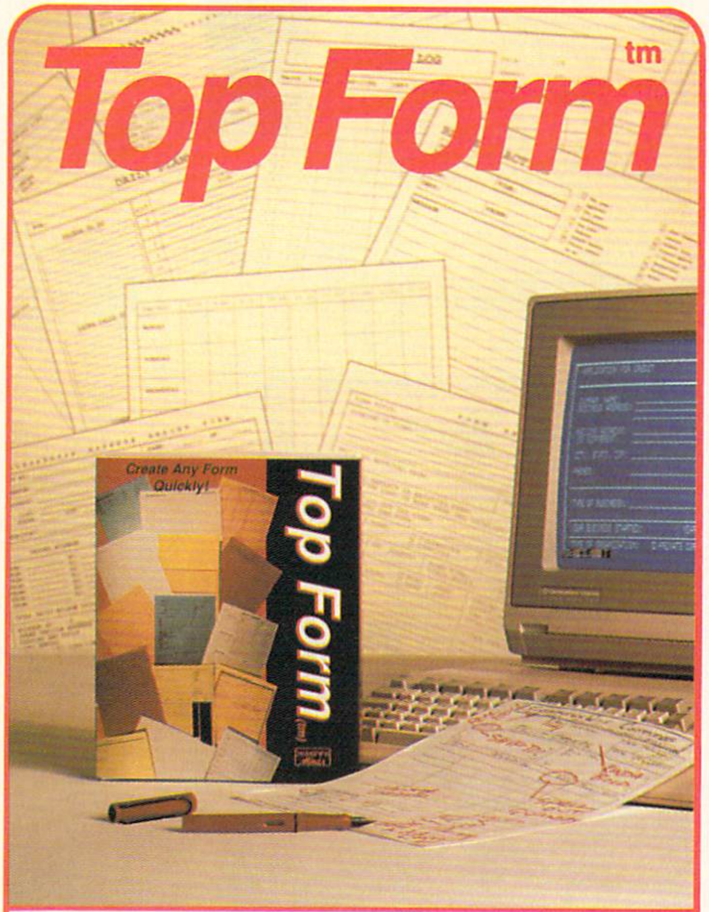

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Byte Shop	Austin
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Computer Skills	Eules
FNS Computer Services	Texarkana
Matagorda Computers	Bay City
Maxwell Book Inc.	Desota
Metropolitan Computer	Richardson
Micro Search	Houston
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Software Terminal	Fort Worth
The Computer Experience	San Antonio
The Computer Stop!	Amarillo
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Chatham Computer Sales	Chatham
Classic Computer	London
Coffey's News Depot	St. Thomas
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EDITORIAL CONTENT

THANKS AND MORE THANKS— ATLANTA WINS! AMIGA HELPS!

Congratulations to the many folks in Atlanta for their Olympic win. September 18, 1990 was a big day for residents of that city, as they added "Host of The Summer Olympic Games 1990" to their already long list of titles and achievements.

Although we discuss the Atlanta Games again on page 96 of this issue, I personally owe a special "Thank you!" to the people of Georgia Tech and Blue Ribbon Bakery, who invited me down to see a bit of history in the making.

I believe *Amazing Computing* was the only publication of any type to cover the tremendous work of the many professionals gathered at Georgia Tech prior to the final decision of the International Olympic Committee (please see "An Olympic Team" on page 40 of AC's October, 1990 issue).

Of course, the Atlanta story was exceptionally interesting to us since it reported on the use of the Amiga in an expanding technology. It was highlighted by an international news event—the selection, in Tokyo, of the host city for the centennial 1990 Summer Games. Yet, this story is more than just images and Amiga technology. This story is about people.

While Atlanta's successful bid for the Olympics was based on the work of hundreds of people contributing thousands of hours of volunteer effort, our focus was on a small, dedicated team of professionals, each concentrating on a single portion of the whole. As I watched these people adding to and refining their work, I was impressed with how well they worked together.

After months of preparation and serious effort, the Georgia Tech team was only hours away from an immovable deadline, and still each member attempted new techniques and changes in order to produce an even better work of art. Their coordinated effort and genuine dedication was more than impressive—it was inspirational.

As I left Atlanta that evening, I saw hundreds of signs, banners, posters, etc. bearing the Atlanta Organizing Committee's Olympic emblem. The same spirit that had welded the members of the Georgia Tech team into a professional organization, was clearly at work throughout the entire city of Atlanta. These people truly wanted the Olympic Games in their city.

I believe the International Olympic Committee views the attitude of a city as strongly as they view other features when considering a future Olympic site. If a community can work hard for years on only the promise that they may succeed, it follows that, if selected, they will continue to work hard to make the event a success.

In the beginning, Atlanta had only a modest chance, but they turned every opportunity into an advantage. They not only demonstrated to the IOC that they are capable of hosting the Olympic games, they proved it to themselves.

A LITTLE WORK OF OUR OWN

In the June, 1989 issue of AC, we produced a special section within the magazine called *AC's TECH For The Commodore Amiga*. This section was dedicated to technical articles and topics that, until then, we had not gotten into the regular issues of AC. In truth, the section was a test, to determine the level of interest in a publication dedicated specifically to technical questions and concerns on the Amiga.

Apparently, there is. At least, the calls, letters, and comments you have made to us at trade shows say that you like what you get in *Amazing*, but that you want even more programming, hardware projects, and special tutorials. Our only problem was deciding how best to give you *everything* that you have requested.

We have been discussing several options with different authors and Amiga developers for months, and have decided that the only way we can bring you the kind of additional coverage you have requested is to create a separate publication. In January, we will release the first special issue of *AC's TECH For The Commodore Amiga*.

The first *AC's TECH* will be priced at $14.95 (OK, it is cheaper if you order it ahead of time), and it will contain all the programs on disk. This will be the first time that we have packaged a disk with a magazine, but given the caliber of programing that we want to attain by reading this new publication, we see no other option.

Starting such a publication is not something that is done lightly. We want to provide the Amiga community with the best that we can offer and maintain the high standards that we have been able to establish and maintain in *Amazing Computing*. To do all of this, we will once again ask for—and require—your assistance.

First, if you are a programmer or hardware hacker, get in touch with us. Your routines and projects will provide the essential ingredients to make this publication work for all of us.

Second, if there is an area of the Amiga that you would to see explained, or if there is a project for the Amiga that you hope someone will create, write us. We need your feedback in order to form all of our projects into something that you can use.

WHAT ABOUT AC?

In our conversations with authors, we have already been asked: "What will happen to AC?", "Will it change?", and "Will AC become another ad-filled glossy?"

No to all! AC will remain the magazine it has always been—yours. We have no desire or need to lose any of the edge that *Amazing* puts on programming or hardware projects. In fact, we expect our increased technical involvement to increase our ability to provide more such articles in AC than ever!

Thinking back to when we decided to create *AC's GUIDE*, some readers feared that AC would stop providing new product announcements and would also cut down on the number of reviews presented monthly.

In truth, just the opposite has occurred. Having quickly developed *AC's GUIDE* into the world's number one resource for Amiga product information, we have at the same time become a great deal more successful in getting new product announcements and products for review—and earlier, too. This has allowed us to provide our monthly readers with information about new releases *months* before any other Amiga publication can.

With *AC's TECH*, we will now be able to attract even more programmers, hardware specialists, and other ingenious, creative people to write for both publications.

Sincerely,

Don Hicks
Managing Editor

The Best Assembler

Macro68

Suggested retail price: US$150

Macro68 is a powerful new assembler for the entire line of Amiga personal computers.

Macro68 supports the entire Motorola M68000 Family including the MC68030, MC68882 FPU, and MC68851 MMU. The Amiga Copper is supported also.

This fast, multi-pass assembler uses the new Motorola M68000 Family assembly language syntax, and comes with a utility to convert old-style syntax source code painlessly. The new syntax was developed by Motorola specifically to support the addressing capabilities of the new generation of CPUs.

Macro68 boasts macro power unparalleled in products of this class. There are many new and innovative assembler directives. For instance, a special structure offset directive assures maximum compatibility with the Amiga's interface conventions. A user-accessible file provides the ability to customize directives and run-time messages from the assembler. An AREXX(tm) interface provides "real-time" communication with the editor of your choice. A number of directives enable **Macro68** to communicate with AmigaDos(tm).

Possibly the most unique feature of **Macro68** is the use of a shared-library, which allows *resident* preassembled include files for incredibly fast assemblies.

Macro68 is compatible with the directives used by most popular assemblers. Output file formats include executable object, linkable object, binary image, and Motorola S records.

Requires at least 1 meg of memory.

ReSource, the powerful disassembler for the Amiga that has received rave reviews, now has a big brother.

Like the original version, **ReSource'030** will tear apart your code like no other program. And it will do so even faster now, because **ReSource'030** is written in native MC68030 code. This means that it won't run on a vanilla 68000, but will fly on an A3000, or another machine with a 68020/030 board.

ReSource'030 supports the new Motorola M68000 Family assembly language syntax, and is a perfect companian to **Macro68**.

If you're new to **ReSource**, here are a few facts:
ReSource is an intelligent interactive disassembler for the Amiga programmer. **ReSource** will enable you to explore the Amiga. Find out how your favorite program works. Examine your own compiled code.

ReSource will load/save *any* file, read disk tracks, or disassemble directly from memory. Symbols are created automatically, and virtually *all* Amiga symbol bases are supported. Additionally, you may create your own symbol bases.

"If you're serious about disassembling code, look no further!"

The original **ReSource** continues to be available for owners of 68000 based machines.
Both versions of **ReSource** require at least 1 meg of ram.
Suggested retail prices: Original **ReSource**, US$95, **ReSource'030**, US$150

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Feedback

MORE PROGRAMMING IN C

I enjoyed reading Paul Miller's article on programming in C without the luxury of having a hard drive ["Programming in C on a Floppy System", AC V5.9]. It's nice to see articles written for users who don't have 8 megs of RAM and a 50-meg hard drive. After reading the article, though, I wanted to describe to you my C programming setup. I have an A500 with one drive and 1 meg of RAM and use three disks to set up my programming environment. The first disk is my Workbench boot disk. The second disk contains all of the include files, the libraries, and the text editor that I use (EMACS). The third disk contains the C-specific programs (compiler, linker, etc.) and the source codes.

I first boot the system, mount the VD0 recoverable RAM disk, and move all common commands (copy, delete, list, etc.) into memory using ARP's Ares. I then insert the Source code disk, and execute a script called InitC. To avoid excessive disk swapping, this script copies a second script (InitCII) to RAM and executes it. InitCII copies all of the include files and libs from the Include disk into their own directories on the RAM disk, then runs the text editor. Since all of the copied files and the text editor are on a single disk, the amount of disk swapping is minimal (three swaps from start to finish). Also, once this setup is completed, I never have to swap another disk. After all this is accomplished, I still have over 400K of RAM with which to work.

One of the keys to this approach is that since I use my Workbench disk to boot the system, I can put the C-specific programs (compiler, etc.) on the same disk as the source codes. One other way to free up a few K's of RAM is to figure out which include files are required by the program that you are presently working on and copy only those to the RAM disk. It requires a little more work to find out which ones you need and to write a script to copy only those, but if space is tight, it's definitely worth it.

Sincerely,
John Maslanski
Baltimore, MD

SCRIPT FILES: WHERE DO THEY BELONG?

In the past year I have read many articles, at least 6 if not a dozen, in several Amiga-specific magazines, yours included, that detail the development and use of Amiga "scripts". Then they "blow it" by saying, "Place this in your C: or SYS: c directory." This is absolutely wrong.

"Script files" belong in the S: or SYS: s directory and "Commands/Programs" belong in the C: or SYS: c directory. This is because the "Execute" does not use the Amiga's "path" facility.

The only thing that "saved" these authors is that they also said, "Use the 'Protect' command and set the 's flag' on in the 'script file' you just made."

Setting the "s flag" on in a "script file" allows you to just enter the filename on the "Command Line" and invokes the "RUN" command that uses the Amiga's "path" facility to find the file, and then pass it to the "Execute" command to do its job.

The C: directory is cluttered enough and should be reserved for Commodore's commands/programs. Plus, who would "logically" look in the "command directory" (i.e., C:) for a "script file"?

Also, I dislike programmers who force you to place "their greatest program" in the C: directory (that's something I can't control, but where a "script file" goes, I can).

Bert Allen
Sacramento, CA

WILL I NEED PROFESSIONAL SCANLAB?

I am planning to purchase the Sharp JX-100 Scanner for an A2000. I will be using it primarily to import scanned images into Professional Page documents. Will Professional ScanLab allow me to do this, or do I also need the ASDG-RESEP software?

Also, does the $995.00 price of the scanner include the Professional ScanLab software and necessary hookups? A prompt reply will be greatly appreciated. Thank you.

Sincerely,
Chris Stone
El Paso, TX

—ASDG Production Manager Dave King stated that the JX-100 cannot import scanned images into Professional Page (Gold Disk, Inc.) directly. If you purchase the Sharp JX-

→

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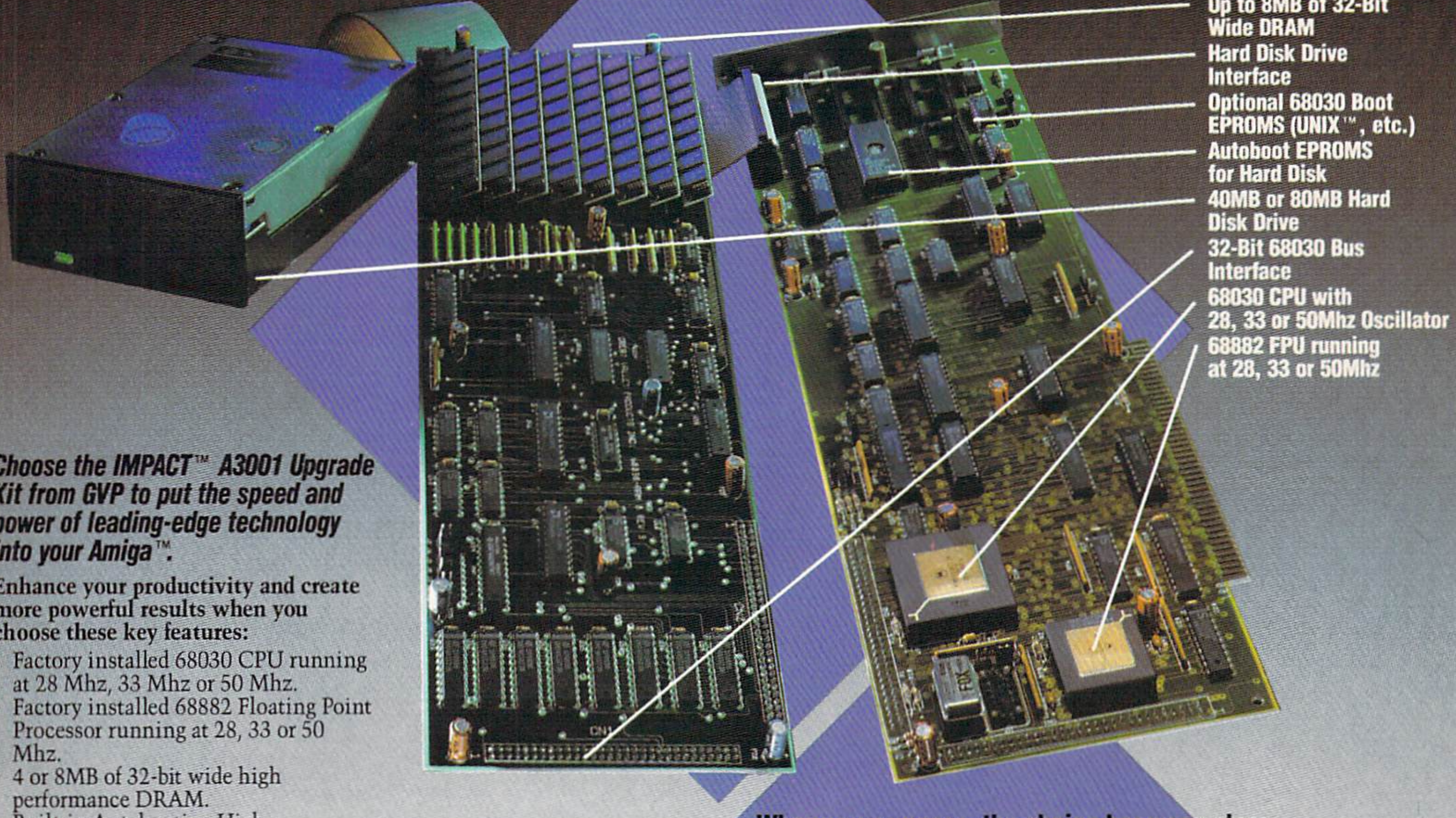
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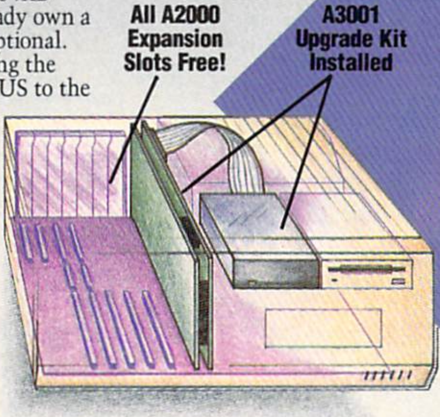
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Hard Disk Controller on 68030 Processor Board.	Y	N	Y
Number of *Open* Amiga expansion slots with hard disk drive and 8MB *Fast* memory installed.	5	3	4
Allows user to start with low-cost A2000 Amiga system and grow all the way to 50Mhz 68030 performance without sacrificing anything.	Y	N	N
Brand name vendor with solid reputation.	Y	Y	Y
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Fully implements 68030 Burst Mode up to 33Mhz.	Y	N	N

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100, you will also need to purchase ASDG's The Art Department (a 24-bit image processing system; price: $89.95) to do the importing. If you want to use 24-bit color, the ASDG-RESEP (price: $59.95) is required to work with Professional Page because the JX-100 is only an 18-bit scanner. The Sharp JX-300 and the Sharp JX-450 are 24-bit scanners that require Professional ScanLab. The software included with the JX-100 will process 18-bit color scans into any Amiga format. No additional hardware is required. —ED.

FRAMEBUFFER WYSIWYG

I read the article "Mimetics' FrameBuffer" [AC V5.8] by Lonnie Watson and liked what I read. I have used this board with my Amiga 2000 to produce graphics to video (U-Matic/SP and Betacam/SP). The images are fantastic because this device can display a color palette of over 16 million colors. But for me, without a transport controller, producing animations with the FrameBuffer is not that simple.

I would like know if you have any notice about a paint system or animation software that can be used directly on the FrameBuffer, like the "TIPS" with Targa Boards.

Sincerely,
Alberto Curi
Rio De Janeiro, Brazil

—A spokesperson at Mimetics has verified that there is currently no way to paint directly on the FrameBuffer.

However, there are at least two other options presently available: Mega Paint, a 24-bit RGB paint program by Pseudo Vision (available through Mimetics) that works directly with the FrameBuffer; also, ASDG's The Art Department.—ED.

OUT OF SYNCH!

I am an avid reader of your magazine and appreciate it as a useful—and not just an "advertisement-full"—magazine. However, I have one problem, and that concerns a program located in the "Synchronicity" article found in the July issue [AC V5.7] this year. I am a non-programmer, so please be patient with my explanation.

I get the first menu just fine (Set EEG Frequency. etc...). I hit return and get the second menu (delta theta...) just fine, and I select one choice by hitting 1, 2, 3, or 4, and then I get the first menu again. I hit "2" this time to select the time parameter (I hope), and I get an error message of "syntax problem" and the line below is highlighted.

```
INPUT a
     ON a GOTO EEG, ptime, start, pEND
```

Any suggestions? Is there a problem? Any help would be appreciated. Thank you.

Sincerely,
Dr. Peter Frederikse
New York, NY

—We double-checked the listing printed on page 30 of AC V5.7 against the original code programmed by author John Iovine, and found the listing to be both accurate and complete. We have run this program and have not encountered any problems.

Check your code again, line by line. From here, it seems likely there may be a problem with other code relating to the above ON GOTO statement.

Ask someone else to look over your work: a colleague can often detect problems that you have overlooked—ED.

WHERE IS AGGRESSIVE?

I am attempting to find a software program called "The Stock Analyst" by Aggressive Communitations at mail order houses. Apparently sold only by the maker. Do you have and address or phone number of the maker?

Many Thanks
C.W. Stegall
Little Rock, AR

—Here is the address and phone number we have listed for them.

Aggressive Communications
P.O. Box 260883
Plano, TX 75026-0883
(214) 424-2608

The Stock Analyst is up to Version 2.0 and is now priced at $50.00.—ED.

All letters are subject to editing. Questions or comments should be sent to:

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•AC•

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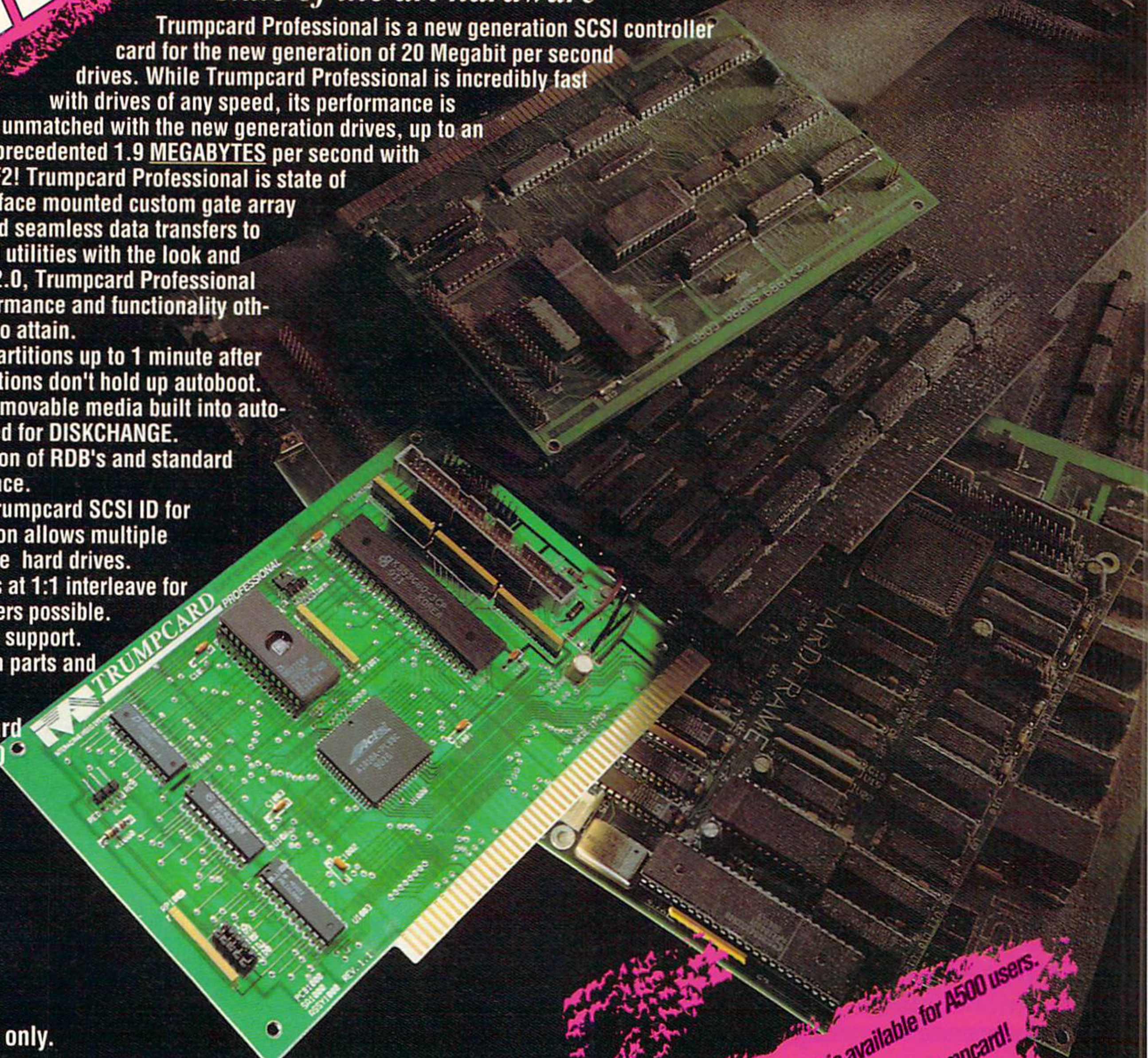

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High-Density Media Comes To The Amiga:

Applied Engineering's AEHD Drive

Often, Amiga users have had to wait to gain access to a wide variety of computer peripherals common on other computer platforms. The high-density floppy drive is one such peripheral. High-density floppy based media has been standard equipment on both IBM and Macintosh systems for some time now. Still, no discernable effort has been made by Commodore to add support of this kind to the Amiga. With the release of the Amiga 3000, I expected to find a high-density drive sitting in DF0:, but such was not the case.

by John Steiner

With the introduction of the AEHD 3.5-inch high-density drive for the Amiga, Applied Engineering, a relative newcomer to Amiga hardware development, has finally provided the Amiga user with high-density drive capacity. The stylish drive is an external drive unit that simply plugs into the external drive port on any Amiga system.

Even if you don't use its high-density capabilities, there are several features that make this drive a desirable addition to your Amiga workstation. The drive works nicely as a standard 880K Amiga floppy drive, when you insert a standard 3.5-inch, double-density floppy. Indeed, the AEHD drive sports three features that make it superior to many Amiga external floppy disk drives. There is an electronic ejection mechanism that is activated by a small push button on the front of the drive. Since it isn't a mechanical linkage, the button requires little effort to push, and therefore doesn't move backward when a disk is ejected. When you push the button on the AEHD, it operates an ejection motor that expels the disk smoothly and safely. Most important, the disk will not eject until the drive has finished writing on the disk, meaning you cannot accidentally eject a disk from the AEHD drive prematurely. Certainly, if you have ever trashed a disk by popping it out of the drive too early, you'll appreciate this feature.

An unlikely improvement is found in the drive access light emitting diode. The drive indicator light on the AEHD unit emits both red and green light. The indicator is red during write operations and green during read operations, giving you more positive visual feedback of the current drive status.

The major advantage of the AEHD drive is in its ability to write and read high-density diskettes.

One of the first things you notice about the AEHD drive is that it is quiet when no disk is in the drive. Compare this to the Amiga disk drive which exhibits an annoying click at regular intervals when no disk is in the drive. Often times, Amiga owners either elect to constantly keep a disk in the drive, or run public domain no-click utilities to stop the annoying clicking.

While all of this makes the drive a great additional second floppy unit, the $238.95 I paid my local computer dealer would be very high if not for the increased storage capacity the unit provides. The major advantage of the AEHD drive is in its ability to write and read high-density diskettes. An Amiga high-density format disk, as defined by Applied Engineering, is 1.52 megabytes. There are 80 tracks per side, 19 sectors per track and 512 bytes per sector, giving a maximum of 1.52 MB. The standard AmigaDOS disk format is also 80 tracks per side, but contains 11 sectors per track and 512 bytes per sector, giving the traditional 880K storage capacity per disk.

The industry standard high-density drive format requires a special diskette with a special media formulation that allows the drive to write 19 sectors worth of data in each track. If you were to try this with double-density media, your data would be subject to loss as double-density disks have oxide particles that are too large to be moved readily by the very small head assembly in a high-density drive. High-density disks are automatically identified by an extra opening that is opposite the write-protect opening. The AEHD drive has a sensor that identifies the opening, thus making the determination that this is a high-density diskette. It then expects to read or write to that disk in high-density format.

If you insert a double-density disk in the AEHD drive, its lack of a high-density select opening causes the AEHD drive to read or write in standard AmigaDOS 880K format. In using the AEHD drive with 880K floppies I have not noticed any incompatibilities or read/write errors on diskettes that have been written on by the AEHD drive, and then read from or written on by a standard 880K drive.

Installing the AEHD drive is relatively easy. A standard 880K disk containing an install program used to install the driver software on your boot disk comes with the drive. Once the installation program has been run, you must edit your startup-sequence file to add four lines which will activate the high-density device driver. The modified device driver will cause your high-density drive to appear as two separate drives. If, for example, you plug your AEHD drive into the rear of an A2000, A2500, or A3000 it will respond to 880K disks as if you installed them in DF2:, which is exactly the way any standard double-density disk drive unit operates. If you place a high-density disk in that same drive, however, the drive sends a message to the device driver indicating the presence of the special high-density select opening, and the drive is then referenced as DF6:. If you connect the drive as DF3:, then high-density disks will be referred to as DF7:. High-density drive assignments are always 4 digits above the double-density counterpart reference.

For those who are technically inclined, the AEHD drive uses a program that automatically patches TrackDisk.device, the normal floppy driver supplied with the AmigaDOS operating system. To run the driver (assuming you have the drive plugged into the external drive port DF2:), execute the commands:

```
DEVS:AETD.DEVICE
MountDF(2):fromDEVS:
MountList.AE
DiskChange DF(2):
DiskChange DF(6):
```

If you were installing the drive on an A500 in the external drive port, you would use the numbers DF1: and DF5: instead.

There is a small round hole just below the disk opening labelled "Manual Eject Hole". This opening reveals the strong Macintosh influence present in the drive's design. Indeed, the unit is basically a redesigned Apple Macintosh drive. This design allowed Applied Engineering to bring the electronic ejection features to the Amiga. In addition to making the drive safer by not allowing for the ejection of a diskette until drive activity is complete, the engineers added features to trackdisk.device to support automatic software-driven disk ejection and other features not previously found in Amiga disk drives.

Spotlight on Applied Engineering

Applied Engineering has been around for some time as a major supplier of Apple-compatible peripherals. They have only recently become involved with the design and marketing of Amiga peripherals, but they have come to the Amiga marketplace with a fully featured Amiga product line.

The company's Amiga line currently includes an 880K floppy equipped with all of the automatic safety features and quiet operation built into their high-density drive. The company currently offers memory expansion units for the Amiga 500 and 2000, as well as a clock calendar for the Amiga 500P, the latest 500 to be shipped to dealers. The A500P comes standard equipped with 1 MB RAM, while the 500 comes with only 512K. The 500P, like the 500, has no clock calendar. Applied Engineering's clock calendar plugs into the memory expansion port on the 500P. The company also produces telephone modems, some of which feature MNP protocol and fax capabilities. Future products include a high-density drive that mounts in an A2000 or A2500 internally as DF0: or DF1:.

Problems are few in the installation process. However, if you are not conversant with making changes to your startup-sequence file, you may prefer to have your local dealer install it for you. For those familiar with this process, however, the task is simple. The only problem I had during installation occurred when I put the above commands in my startup-sequence as instructed. The manual did not specify exactly where they should be, so I put them right near the end of the script. Having done that, I found I could not get the Workbench to recognize an unformatted high-density drive. I could format the disk from the CLI using FORMAT DRIVE DF6: NAME HD, and then the icon for the formatted disk would appear on the Workbench. Until it was formatted, however, there was no visual indication on my system that the diskette had been placed in the drive. Only formatted high-density diskettes appeared on the Workbench automatically when inserted in the drive. The manual stated that, when you insert an unformatted high-density floppy, you should get a disk icon labeled DF6:BAD.

I called Applied Engineering's technical support line and explained my problem. The person I spoke with, who had never run into such a problem before, offered to take my name and phone number and return my call after trying to duplicate the problem. He called back the next day with a solution: After confirming that he had duplicated the problem, he advised me that the additions to the startup-sequence file should be made immediately preceding the LOADWB command that should already be in the startup-sequence file. He told me that, by putting the commands after the LoadWB command in my system, the Workbench wasn't expecting to find any disks labelled DF6:. I moved the commands as he instructed and the drive has operated flawlessly ever since. Hopefully AE will modify the manual to indicate where these commands should be placed in the startup-sequence.

One of the main advantages of a high-density drive is demonstrated when backing up hard drives. The data partition of my hard disk contains slightly over 38 MB worth of data, and was backed up on 43 880K format floppy disks. The equivalent number of high-density disks required to back up that partition is only 25, a significant reduction in floppy count.

One of the first things I did with the AEHD drive was run the hard disk backup utility Quarterback. It was in this effort that I ran into a major problem. Quarterback recognized the new drive properly, and calculated the required number of floppy disks correctly. I was then instructed to insert the first diskette and begin writing. Once the disk was filled, the software prompted me to insert disk number 2. I pressed the eject button but not come out. Quarterback would not shut off the drive motor so that the automatic drive ejection could operate.

I placed a call to Quarterback author George Chamberlain of Central Coast Software and asked him about the problem. He commented that he had just this week received an evaluation unit from Applied Engineering and had begun to explore the reasons why the drive eject would not actuate. It seems the large capacity drive was appearing to Quarterback to be a higher capacity tape drive or other non-floppy media, so it wasn't sending a disk motor off command at the appropriate time. Mr. Chamberlain commented that a modification to Quarterback to remedy the situation wouldn't take much effort.

In fact, within a few days I received an upgrade to Quarterback, version 4.2, which adds support for the AEHD drive unit. The upgrade operated with the AEHD drive unit flawlessly. According to Mr. Chamberlain, a problem with the AEHD driver prevented the automatic disk ejection feature built into the drive from operating properly. That feature is expected to work in the next version of the AEHD driver.

Since Quarterback is the only hard disk backup utility I own, I was not able to test the drive using any of the other commercial backup utilities. The supplied backup software that comes with Workbench 2.0 on the Amiga 3000 allows selection of df1:, df2:, or df3: only via a pull-down menu. That means there is no way to select df6: with an Amiga 3000 when using Workbench 2.0's hard disk backup software.

The operation of the AEHD drive appeared slow to me during disk writes, so I used a public domain disk speed utility to compare disk access times to those of a standard Amiga 1010 floppy drive. As you can see by the partial test results listed below, my conjecture that the drive is slower when writing in high-density mode than a standard Amiga

→

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floppy was confirmed. Read times are appreciably faster, however. When the AEHD floppy is accessed as a standard 880K diskette, the speed difference is negligible.

	Amiga 1010	AEHD 880K	AEHD 1.52MB
Bytes/s Create	4701	4709	3826
Bytes/s Write	3063	3058	537
Bytes/s Read	11496	11620	13823

I was also disappointed to find that the MS-DOS compatibility listed on the box referred to 720K MS-DOS diskettes when used with CrossDOS, a program from Consultron that allows the Amiga to read and write MS-DOS format diskettes. I tested the drive using CrossDOS version 3.0 and it worked fine with 728K MS-DOS diskettes. It does not work, however, with 1.44 MB high-density MS-DOS floppies. Nor does it work with CrossDOS version 4.0 as this version requires that a patch be applied to Trackdisk.device which appears to be incompatible with the patches applied by the AEHD driver.

Many of the problems I found are related to the current AEHD driver, which is also incompatible with Workbench version 2.0. A spokesperson from Applied Engineering's technical support division stated that the driver upgrade referred to here will be available within a few weeks. *Editor's Note: Applied Engineering has developed a driver which addresses the incompatibility problems associated with both Quarterback and CrossDOS. This new driver is now being shipped with all AEHD drives.*

In conclusion, I am very happy with the capabilities of the AEHD drive, and have learned to live within its few limitations. The engineering that went into the design of this drive is impeccable. The drive mechanism is of very high quality, with the system delivering fully the performance touted through its specifications. AE's technical support personnel treated me courteously and questions were answered quickly. When an answer was not known, those in technical support promised to find the answer and call me back, and they kept that promise.

If you have a hard disk and only one floppy drive, and have been considering a second floppy drive, consider adding a high-density drive as the second drive unit. Backing up your hard disk will involve much fewer disk changes, and your library of data diskettes will be decreased by about 40 percent. •AC•

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Inquiry #213

NEW PRODUCTS & other neat stuff

50-MB Removable-Media Hard Disk Drive

Great Valley Products and **Ricoh Corporation** have teamed together to produce a new 50-MB removable-media hard drive for the Amiga, the **GVP SeriesII RH-5500**. Ricoh File Products Division, a division of Ricoh Corporation, will OEM their new RH-5500 50-MB removable-media hard drive to GVP, who developed the software and SCSI controller for the drive and will have exclusive distribution of the RH-5500 in the Amiga marketplace.

Combining the convenience and ease of use of a floppy disk with the performance and capacity of a hard drive, the GVP SeriesII RH-5500 promises to be ideal for memory-intensive applications such as multimedia, imaging, video manipulation, video rendering and 3-D animation and graphics, as well as any environment requiring fast access to large amounts of data. The GVP SeriesII RH-5500, a 5 1/4-inch, half-height drive, which uses removable 50-MB cartridges, is compatible with all Amigas. By purchasing additional cartridges, users have virtually unlimited storage.

The drive has other added features to ensure data integrity and drive performance. A precision tracking mechanism ensures that each 50-MB cartridge is interchangeable between drives. The RH-5500's automatic head retraction system ensures that the drive head is exposed only when a cartridge is placed in the drive. Both the drives and the cartridges are shock-resistant.

With its 25-millisecond average data access time, the drive is designed to function as a system's main memory device, replacing conventional fixed hard drives. Each 50-MB cartridge offers the storage equivalent of over 60 standard floppy disks.

The GVP SeriesII RH-5500 package includes disk drive, one 50-MB cartridge, and a GVP SCSI controller. *GVP SeriesII RH-5500, Price: $999.00, Great Valley Products, 600 Clark Avenue, King of Prussia, PA 19406, (215) 337-8770, Inquiry #220*

A-MAX II

ReadySoft, Inc. has released **A-MAX II**, an upgrade to their popular Macintosh emulator. The new package now handles most major Amiga hard drive controllers to provide full hard drive support during

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Macintosh emulation with both Amiga and Mac hard drives. A-MAX II also supports other standard SCSI devices, such as the LaserWriter IISC and scanners, through Amiga-compatible hard drive controllers.

A-MAX II also sports improved handling of Amiga accelerator boards with MMUs to produce speed increases of up to five times normal speed and the ability to play Macintosh digitized sounds during emulation.

Registered A-MAX users will be contacted by the company regarding upgrade policies. *A-MAX II, Price: $249.95, ReadySoft, Inc., 30 Wertheim Court, Unit 2, Richmond Hill, Ontario, Canada L4B 1B9, (416) 731-4175. Inquiry #223*

CanDoing

INOVAtronics, makers of CanDO, have released a follow-up to their popular authoring package. **ProPak 1** consists of several professionally designed decks (i.e., CanDo-generated software applications), utilities for use with CanDo, and some useful extensions to CanDo itself. Strategy and real-time games and a paint program, all created in CanDo, serve to showcase CanDo's applications generator, while other new modules highlight CanDo's extendibility.

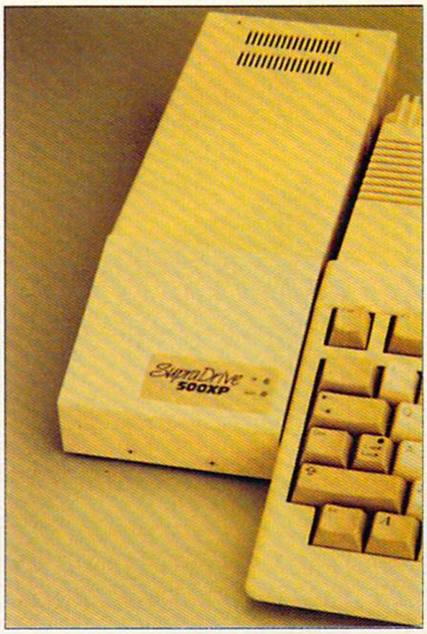
ProPak 1 includes one disk and manual, and retails for $39.95. Also, **Intro Pak**, a tutorial-intensive guide to the ins and outs of CanDo, is due out shortly and will retail for $39.95. *INOVAtronics, 8499 Greenville Avenue, Ste. 209B, Dallas TX 75231, (214) 340-4991. Inquiry #222*

Dogfights Above The Trenches

Wings, Cinemaware's latest creation for the Amiga, is an episodic, action/adventure game based on the exploits of the daring pilots of World War I. You begin as an Allied recruit who must earn his wings in practice drills. As you progress through the trials of war in dogfights, bombing runs, and strafing missions, your abilities are matched by advancingly difficult scenarios. Each session requires that a different skill be learned, and quickly. Such skills may only be perfected as you earn your wings in white-knuckled combat. Your continued success yields an improved tally, while a single slip during combat means a sad ceremony over your small grave somewhere in France.

Running through the action is the story of the young aviators. Each mission is separated by a journal entry that your character keeps. The real "action" of this game is not the faultless graphics or its ease of use. The strength of Wings is in the effortless way it blends the characters, music, and realistic sounds with the three different arcade action styles into a believable story. You are as interested in discovering what comes next as you are in blasting Germany's finest.

Wings requires 1 meg of memory and is hard drive or RAM-installable. The RAM requirements are critical and you may need to temporarily change your startup procedures in order to make the product function correctly. Wings is not copy-protected but does use a fact-filled "Aviator's Manual" for code access to the program. While Wings should not be compared to the more complex flight simulators, its storyline and smooth production will prompt you to put on your goggles and silk scarf for a trip into history. *Wings, Price: $49.95, Cinemaware Corporation, P.O. Box 5083, Westlake Village, CA 91359, (805) 495 6515. Inquiry #224*



SupraDrive 500XP

The latest addition to **Supra Corporation**'s hard disk line, the **SupraDrive 500XP for the Amiga 500**, offers a complete hard disk system with the ability to add up to 8 MB of Fast RAM in a variety of configurations.

Employing state-of-the-art micropower mechanisms that consume less than 4 watts of power, the 500XP provides maximum flexibility and compatibility via several external switches that let the user easily reconfigure the 500XP to meet specific needs. At the flip of a switch, the user may disable or enable autobooting, change the drive's SCSI device number, disable the RAM, or disable the hard drive.

Installation is refined to a simple plug 'n' go procedure, with the 500XP plugging directly onto the Amiga's expansion port. The external SCSI port and Amiga bus pass-through allow other devices to be connected easily as well. Up to 6 additional SCSI devices (e.g., removable media, tape backups, or add-on hard drives) and additional Amiga bus devices (e.g., digitizers) can be connected.

The SupraDrive 500XP comes with a variety of software, including ExpressWay Software's ExpressCopy hard disk backup software and SupraBoot and SupraTools, Supra's hard disk formatting,

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file management, and utility software. The 500XP features a one-year warranty. Pricing starts at $679.00 for a 20-MB drive with 1/2 MB of RAM installed. *Supra Corporation, 1133 Commercial Way, Albany, OR 97321, (503) 967-9075. Inquiry #225*

Another Dimension To Drawing

Adspec Programming has released **Draw 4D**, a multi-dimensional structured drawing and animation program for use in desktop publishing and video applications.

With Draw 4D, drawings consist of polygons of any complexity/number of sides. Two fonts are provided, as well as a complete font editor that allows you to create new fonts, or modify those provided. Tools provided include group, extrude, sweep, rotate, resize, slant, warp, and pipe.

Draw 4D also features full animation capabilities: Polygons can be turned into special "path" polygons that have alterable instructions for moving and rotating in space. All animations are saved in the ANIM format, and single frames in an animation can be accessed out of order.

Most Amiga modes are supported, including HAM and Overscan. Single frames and drawings can be saved in IFF format for use with painting and desktop publishing software packages. Drawings can be saved in Gold Disk's Clip format, then loaded, for instance, into Professional Draw as fully editable Bezier objects. Clips can be saved in up to 256 levels of grey, or in full color.

The Draw 4D package includes three disks and a 170-page manual, and requires a minimum of 1 MB memory. *Draw 4D, Price: $249.00. Adspec Programming, P.O. Box 13, Salem, OH 44460, (216) 337-3325. Inquiry #226*

The Fax Of The Matter

Applied Engineering announced they will release **AE Send-Fax**, a software/hardware option of the company's DataLink modems that will allow users to fax text and graphics directly from their computer screen to standard fax machines anywhere in the world.

Instead of printing a copy of a message and then feeding the hard copy in a fax machine, users will be able to send the message directly from their Amiga to any Group III fax machine by simply pushing a few keys.

AE plans to announce receive-fax capabilities as options for their DataLink modems later this year.

Applied Engineering, P.O. Box 5100, Carrollton, TX 75011, (214) 241-6060. Inquiry #227

•AC•

The name is not the only thing that has changed—

SAS/C Compiler

by Bruce M. Drake

FORMERLY KNOWN AS THE AMIGADOS LATTICE C Compiler, the SAS/C Compiler Version 5.10 for AmigaDOS from SAS Institute, Inc. represents a major update to the prominent C compiler for AmigaDOS.

In a rapid change this past June, SAS Institute assumed all 68000 Family Compiler Development from Lattice, Inc. SAS is now responsible for all the development and support of the C compiler for AmigaDOS and others. Hence, the name of the compiler was changed from "Lattice AmigaDOS C Compiler" to "SAS/C Compiler for AmigaDOS".

This C compiler is a decendant of the first to be marketed for the Amiga back in 1985. Since then, the compiler has grown and matured to a very reasonable level. Version 5 is known to produce code with a quality equal to that of other C compiler giants. The newest release, version 5.10, adds several impressive new capabilities, the greatest being the addition of Workbench compatibility. It is now possible to program in C using your choice of user interfaces.

NEW FEATURES, WORKBENCH COMPATIBILITY

Even while gaining fame as possessing one of the most flexible user interfaces on the market, the Amiga has sported development packages limited to primarily employing the command line user interface as the means of operating the major language development systems. Now, with Version 5.10, SAS has rectified this problem by adding a new dimension to their C language development system on the Amiga: complete Workbench support.

There are several new features included with this new version that utilize the long-neglected Workbench environment for program development. In addition to new versions of all common compiler files and executables, there are icons and new tools for creating and modifying various projects which were included in an attempt to add variety and functionality to the task of native C language development on the Amiga.

Supplied with the 5.10 distribution are icons to represent .c and .h files, makefiles and lmkfiles, and the main executables needed to manage projects. A new tool, called SASCSETUP, has been included to assist in the creation of new project directories (or in the update of existing directories so as to use icons).

SASCSETUP works by copying predesigned icons from the LC:Icons drawer into the destination drawer. If the directory (or directories) specified does not exist, it will be created and drawer icons will be provided.

SASCSETUP will copy additional icons into the newly created drawer or the existing subdirectory. These icons are for managing files in projects. There are four types of icons: one for .c source files, one for .h header files, one for lmkfiles (or makefiles), and one for executables. The image detail of the included icons is impressive.

Due to the advent of AmigaDOS 2.0 with its fresh new Intuition graphics, the Workbench colors have changed drastically from the original 1.3 selections. In order for the new icons to look good under both versions of the OS, two different sets of icons have been created. At installation time you are given the choice of which icons to install. Both sets are usable under either color scheme, but the colored icon images look better when they are used with the colors for which they were designed. The icons' design are essentially the same for both versions.

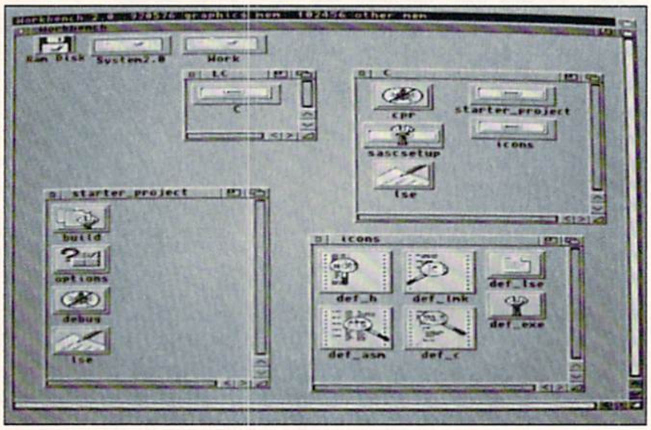
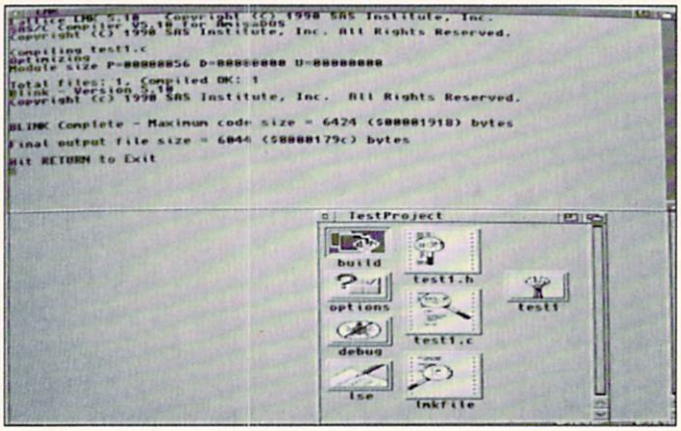


Figure One: View of Workbench 2.0 compatible icons



```
Lattice LMK 5.10  Copyright (C) 1990 SAS Institute, Inc.
SAS/C Compiler V5.10 for AmigaDOS
Copyright (C) 1990 SAS Institute, Inc. All Rights Reserved.

Compiling test1.c
Optimizing
Module size P=00000056 D=00000000 U=00000000

Total files: 1, Compiled OK: 1
Blink - Version 5.10
Copyright (C) 1990 SAS Institute, Inc.  All Rights Reserved.

BLINK Complete - Maximum code size = 6424 ($00001918) bytes

Final output file size = 6044 ($0000179c) bytes

Hit RETURN to Exit
```

Figure Two: Sample project with compile results

For a sample look at the new icons as they appear under AmigaDOS 2.0, see Figure One. As you can see, the compiler package provides all the icons usable in a typical development environment. Note that in the names of the icons, the file extension for which the icon is intended is part of the filename after the underscore. Using this scheme, the user can produce their own icons and put the file extension of the intended target file after the .underscore. Then, SASCSETUP will look for files with the specified extensions in the directory specified and place a .info file in the target directory for you.

Also included is a new program called SASCOPTIONS. The executable resides in your SYS:PREFS directory and includes a corresponding icon. An icon called OPTIONS also exists in each project drawer and is provided to invoke SASCOPTIONS from your project drawer. Double clicking on this icon loads the option setting program. When run, a window with several 2.0-style gadgets appears in the middle of the screen, giving you the means to adjust all the compilation and linkage options that version 5.10 understands.

SASCOPTIONS opens a window with a full complement of gadgets and options in the center of the Workbench screen. I had two impressions immediately after seeing the SASCOPTIONS window open for the first time. One was "Ooh, neat!" The other was "Where is the manual!" I have to admit that, at this point, I discovered that some of the options on the screen were a little unfamiliar, but a search through the manual proved that the compiler options were there all along. I would venture to say that most users will benefit a little from this educational experience.

SASCOPTIONS doesn't fool around when it comes to performing the rather ominous task of giving you some type of gadget to modify all of the compiler and linker options. SASCOPTIONS produces a busy display, full of various gadgets and text, that's functional, too! It takes THREE windows to organize all of the options. Fortunately, a few moments of study (read: play) showed me that there is little to fear. Soon I was happily selecting gadgets for everything under the sun, and enjoying it!

SASCOPTIONS utilizes many gadget types—specifically, both the new sliding-window file requester type (called list gadgets) and rotating-selection push-button type (called cycle) gadgets. The list gadgets are used when one or more user-specific choices can be made, such as a list of extra libraries to link.

The cycle gadgets make your choice of options mutually exclusive from the others that gadget contains, while saving window real estate. These gadgets are used extensively in the new DOS 2.0 Preferences programs and make sense to use.

When there are over 100 different compiler options to manipulate, I tend to concentrate on just the ones I think I will use, and tend to all but ignore the rest. But ignoring options will eventually short-circuit what I call "the exploring spirit", which is the way one often finds out about new things. One of the fringe benefits of using the SASCOPTIONS program is that you can see all available options, making exploring quite a bit easier.

COMPILER ENHANCEMENTS

There are, of course, bug fixes, feature and compile speed improvements, and many additions to the compiler proper. As far as I can tell, the output code of 5.10 versus code produced by version

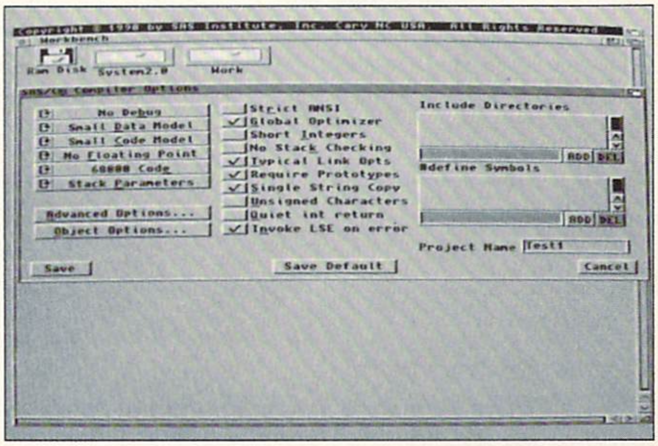
5.05a is not radically different, but it is improved in certain areas. There are changes in the code size and speed; even though these changes by themselves are minor, the results are worth the small upgrade charge.

The compiler driver program LC sports some new options on the command line. One, the "-n" option, allows you to set the minimum length of identifiers. The default is 31 characters, but it can be set all the way up to 100 characters (who would want 100-character identifiers?). This feature was installed due to user requests for longer identifiers and to provide C++ compatibility. Stemming from its object-oriented design goals, the language C++ tends to elicit very long identifier names.

LC also understands the new flag "-E". This has the effect of automatically invoking LSE (the full screen editor) or another editor that uses ARexx (like CygnusEd) upon the production of an error during pass 1 of the compiler. LC passes the filename, line number, and error messages to LSE. To find the location of an error , just hit the <F5> key and LSE positions the cursor on the line that compiler didn't like. By the way, LSE will behave in an integrated fashion with the compiler (à la Turbo Pascal). You can send your source code to the compiler with just a press of the <F4> key.

With this release, SAS addressed some esoteric and obscure problems with the front end parsing of source code. LC1, the compiler's front end, was enhanced to behave more intelligently when the user forgets to terminate a comment or an expression. C++ style comments and enhanced macro parsing were also added. The compiler now attempts to report the error line at the line that starts the culprit macro or unterminated string. During my testing, I haven't witnessed many differences in the error messages when compiling code. On the other hand, I aim to keep code that doesn't report any errors or warnings around.

New warnings have been added to the compiler to report problems in source parsing in a few places. The compiler will now emit a warning if a nested comment has been detected and nested comments are disabled. A warning is produced if an unbalanced comment is detected. The line number of the beginning of the comment is the warning line. Also, unbalanced #if/ #ifdef constructs are detected and a warn-


SASCOPTIONS
Main screen

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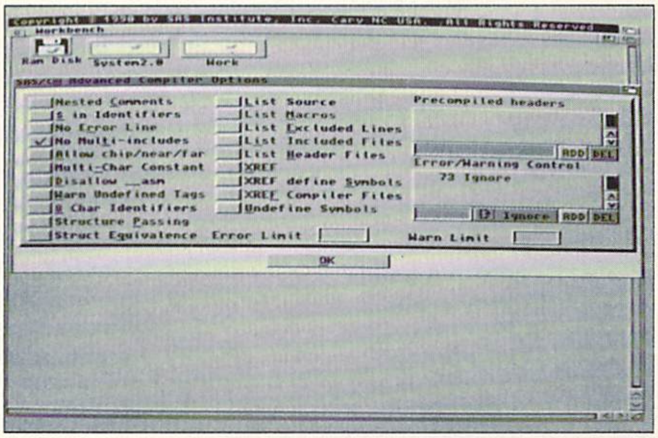
SAS/C® Compiler Options

- No Debug
- Small Data Model
- Small Code Model
- No Floating Point
- 68000 Code
- Stack Parameters

☐ Strict ANSI
☑ Global Optimizer
☐ Short Integers
☐ No Stack Checking
☑ Typical Link Opts
☑ Require Prototypes
☑ Single String Copy
☐ Unsigned Characters
☐ Quiet int return
☑ Invoke LSE on error

Project Name: Test1


SASOPTIONS
Advanced
compiler
screen

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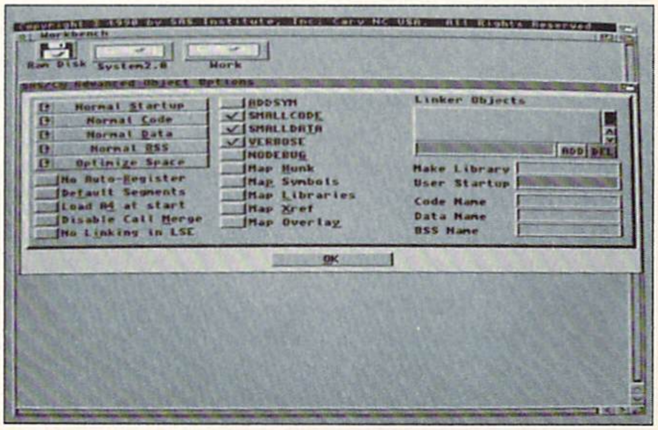
SAS/C® Advanced Compiler Options

☐ Nested Comments
☐ $ in Identifiers
☐ No Error Line
☑ No Multi-includes
☐ Allow chip/near/far
☐ Multi-Char Constant
☐ Disallow __asm
☐ Warn Undefined Tags
☐ @ Char Identifiers
☐ Structure Passing
☐ Struct Equivalence

☐ List Source
☐ List Macros
☐ List Excluded Lines
☐ List Included Files
☐ List Header Files
☐ XREF
☐ XREF define Symbols
☐ XREF Compiler Files
☐ Undefine Symbols

Error/Warning Control: 73 Ignore


SASCOPTIONS
Advanced
object options
screen

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SAS/C® Advanced Object Options

- Normal Startup
- Normal Code
- Normal Data
- Normal BSS
- Optimize Space

☐ No Auto-Register
☐ Default Segments
☐ Load A4 at start
☐ Disable Call Merge
☐ No Linking in LSE

☐ ADDSYM
☑ SMALLCODE
☑ SMALLDATA
☑ VERBOSE
☐ NODEBUG
☐ Map Hunk
☐ Map Symbols
☐ Map Libraries
☐ Map Xref
☐ Map Overlay

ing produced. Of course, LC (and SASCOPTIONS) provides a mechanism for changing warnings to errors, or vice versa, through the "-j" switch.

The compiler has been able to produce indirect references to data since version 3.10. However, if an application has a very large set of global symbols, you run the risk of overflowing the 68000 imposed limit of 32K of indirect access to data. Now the compiler better tracks the consumption of this data memory. Specify the "-ba" switch and the compiler will convert near references (16-bit addresses) to far references (32-bit addresses) automatically. If you rewrite your code to take advantage of this feature, you should realize a code speed savings. Another enhancement is the addition of the keyword "__aligned". This forces the object being declared to be aligned to the next longword boundary. The keyword is placed just before the variable name in the variable declaration. This serves to improve code speed on machines with a 68020 or better processor by taking advantage of the inherent efficiency of longword memory accesses.

Prototype generation has been improved. Now, the typedef name will appear in a prototype which contains a typedef. The new "-pri" switch disables identifier names appearing in prototypes generated by the compiler.

Another gap has been filled in LC by SAS to allow for specification of the startup code by the new "-t" switch on the command line. Not only can you select any of the supplied startup modules, you even have the freedom to specify your own startup code.

> *"The Workbench interface is perhaps the biggest change that was made."*

BLINK ENHANCEMENTS

On the topic of speed improvement, SAS made changes to their linker BLINK which increased its speed up to 200%! The linker now lives up to its name more than ever. The actual speed increase will vary, the manual notes, due to several factors like the number of libraries scanned, whether debug information is required, and whether a map report is being generated. Also, a few minor bugs were removed.

Another feature added to BLINK has made it possible to produce resident (runtime) libraries directly. The manual has a section which discusses the subject in detail. Essentially, you create your C source file using new keywords. After you create a .fd file to match your C code, you pass your object files and the .fd file into BLINK. The output will be your code in a library, ready to call from the OpenLibrary() function.

LIBRARY ENHANCEMENTS

Due to the advent of AmigaDOS 2.0, it became necessary to enhance the standard library Amiga.lib. Since there were many changes between 1.3 and 2.0, Commodore found it necessary to release a whole new amiga.lib for 2.0. The old version of the standard library will still work under 2.0, but if you want to design an application to utilize any of 2.0's many new functions, you must use the newest version. The new library is somewhat larger: it has now reached a gargantuan 156K! This reflects the growth in the size and complexity of the new operating system.

To go hand in hand with the new operating system library are the new include files. SAS has given us the choice of which set of includes to use. I prefer the new 2.0 includes, but the 1.3 and 2.0 includes are in their own directories and foster switching back and forth as one sees fit.

The manual documents the addition of new functions to the standard Lattice (SAS) libraries. These new functions enhance UNIX compatibility and mainly fill the hole in the directory handling functions. These new routines are: opendir(), readdir(), seekdir(), telldir(), rewinddir(), closedir(), stat(), and isatty(). These new functions offer respite to programmers who need to port UNIX code to the Amiga and have found the environment lacking some familiar functions. A UNIX diehard may yet still find reason to complain about the new environment, but it is true that the result of using the UNIX interface for coding without the requirement of portability is inefficient and slow code.

MISCELLANEOUS ENHANCEMENTS

The include files supplied by Commodore for inclusion with this development system have changed. The need to provide the new 2.0 include for both C and Assembler has made it necessary to increase the number of distribution disks from five to six. Fortunately, the installation script will give you the choice of installing either set, or both sets, on your hard or floppy disk copy.

The standard assembler received only minor modifications for this release. The standard mnemonic EQUR has been added.

In the spirit of unity, Lattice originally supplied a full screen editor for all microcomputer versions of their compiler. However, due to popular requests, LSE received some Amiga-specific enhancements with this release. One such enhancement is the addition of an ARexx port and a corresponding control mechanism. Anyone familiar with ARexx can now control the editor and make a reason-

(continued on page 45)

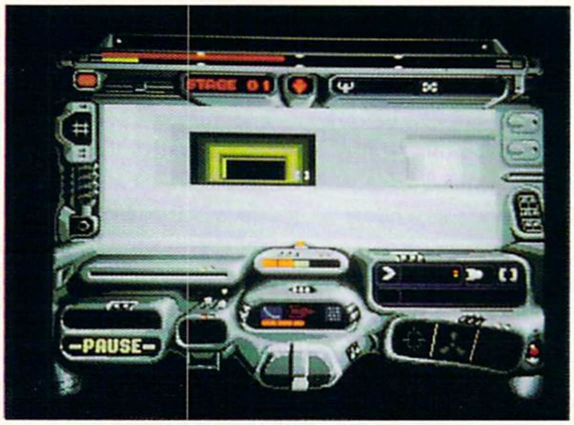
SNAPSHOT

by R. Bradley Andrews

TUNNELS OF ARMAGEDDON

In Tunnels Of Armageddon, from California Dreams, mankind has been offered the opportunity to join an established galactic federation—but there is a catch. A clever puzzle has been buried deep in the Antarctic ice. Earth has just been informed of said puzzle's existence and now has limited time to prove its worth to interstellar society.

The challenge is a series of tunnels buried deep within the ice. At the end is a doomsday device that can destroy the entire planet. Earth's top scientists must together build the ultimate racing machine that can outrace the destruct signal through the tunnels. But however good the machinery, the human element is the most important.



California Dream's Tunnels

You have been chosen Earth's most skilled racer and it is up to you to reach the end of the tunnels, disarm the device before it explodes, and prove that Earth is worthy of entry into the interstellar society. Several items will try to block your progress. A few are harmful, such as automated guardians that shoot at your ship, and generators that help speed the destruct message to its goal. Other items are useful, including more powerful shots, autopilots, plasma bombs, and invisibility shields.

The screen contains the "dashboard" view common in vehicle simulators; the actual course, seen through the viewport, is a three-dimensional filled wireframe view of the tunnels the craft is currently flying through. Various indicator lights reflect your ship's status. Sound is limited mainly to the zaps of your weaponry.

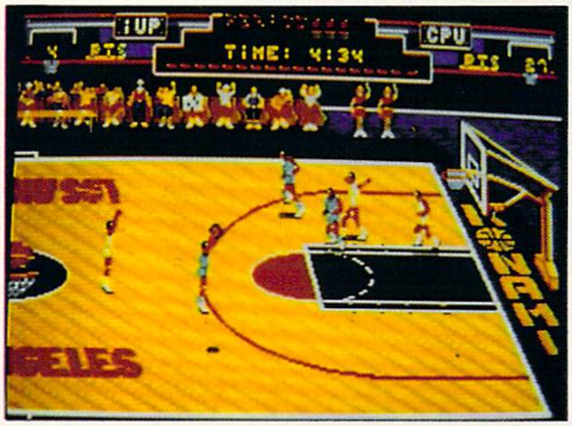
Tunnels Of Armageddon is lacking in several areas. Mouse control proves rather difficult, with the joystick becoming the preferred mode of control. Many of the special functions are activated by the keyboard and, while this may have been necessary, it does take a while to become comfortable with all the available functions. Those who enjoyed Powerdrome and other quick reaction vehicle simulators will probably enjoy Tunnels of Armageddon. Others may well find the game's action too fast, and the lack of any real strategy very limiting.

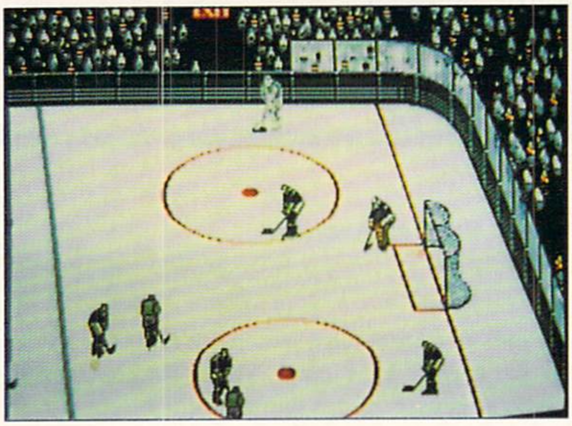
TWO FROM KONAMI: DOUBLE DRIBBLE & BLADES OF STEEL

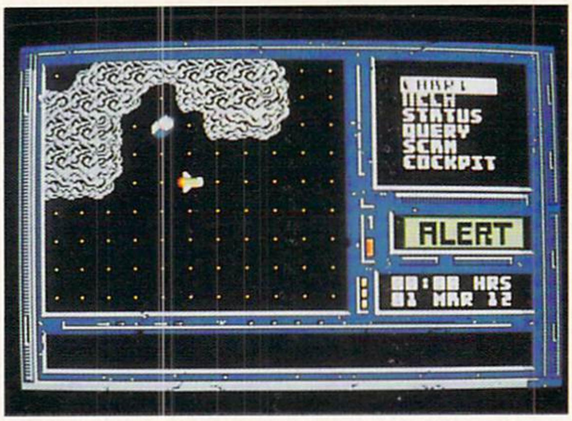
Double Dribble and Blades of Steel, two recent arcade action sports games from Konami, are loaded with the action common throughout Konami games. While both cover sports, the two games are different enough that each is worth having in your collection.

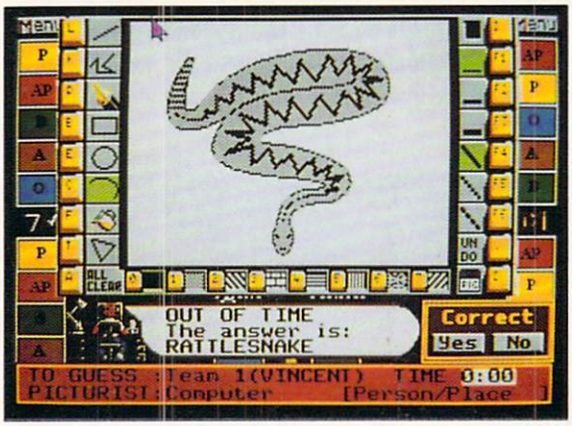
Double Dribble includes all the elements you would expect in a basketball simulation: full-court play, fouls and foul shots, steals, and close-ups of various stuffs of the ball into the hoop.

Konami's Double Dribble









OUT OF TIME
The answer is:
RATTLESNAKE

TO GUESS :Team 1(VINCENT) TIME 0:00
PICTURIST:Computer [Person/Place]

top to bottom: Blades Of Steel, Space Rogue, Pictionary

Blades Of Steel covers the less popular, though no less action-filled, sport of ice hockey.

Control in both games is very simple and straightforward. The currently active on-screen character is controlled by the joystick. Quickly pressing the fire button passes the ball or puck while on offense, or changes the currently active defensive player. Longer presses activate the shooting sequence or attempt a steal. Blades Of Steel adds a twist in that the shot must be released when a moving arrow is away from the goalie's current location; otherwise the shot will be easily blocked. Stealing the puck, blocking a shot, or recovering a rebound all take a bit of practice. Blades is a bit simpler in the stealing and blocking areas, but executing winning goals is much more difficult.

The graphics are well done and action flows smoothly on the screen in both games, with the close-up cut-a-ways of slam dunks in Double Dribble adding considerable flair to the game. The sound on both is also well done and complements play. As with most Konami games both rulebooks are short, but each does a reasonable job of explaining the controls necessary for the game. Of course, it is up to the player to translate this information into successful play.

SPACE ROGUE

Space Rogue is Origin Systems' recent entry in the space-going role playing game arena. The game begins when your space navy career is abruptly terminated: while investigating a derelict ship, your main vessel, and all your crew mates, are destroyed by alien pirate ships. Fortunately, the derelict is undamaged, thereby providing you with a vessel. After making your way to the nearest star base, you must begin your new life as a galactic trader, raising your personal capital, as well as solving the mystery behind your original ship's destruction.

The game uses both overhead graphics for long-range movement in space, and for moving your character around space ports. When maneuvering your ship within a sector, such as to dock with a space port, you are switched to the "view out the cockpit" common to many space-flight games. Travel between planetary systems is achieved via Malir gates. Each system has one or more, and after flying into them at sufficient speed, your craft is launched into hyperspace. To remain in hyperspace, you must fly through a sort of tube in space; if you miss too many of the circles comprising the tube, you will be ejected at the original gate, with any damage suffered while in hyperspace being accrued.

Trading is relatively simple; the prices fit a basic range and each system has its own good products to buy and sell. In addition to trading, many influential and informative people live on the various space stations throughout the federation's realm. Many have information that is vital to your quest. The graphics are fairly simple, by Amiga standards, but the whole program fits on a single disk, and the graphics are detailed enough to provide a good feel for the game.

The rulebook is reasonable informative, though some potentially useful information seems to have been left out. The box even includes a cardboard cutout that forms a replica of the ship you control during the game. And as other companies have done with their role-playing games, Space Rogue has its very own arcade game (set in this future universe).

Space Rogue is far from perfect however. The necessity of the hyperspace tube sequence is questionable, as it becomes basically a repetitive test of your reflexes which simply gets in the way of solving the mystery. Also, the tactical space flight, while interesting at first, and necessary for combat sequences, becomes very annoying after a while. Also, some form of auto pilot to bring the ship into the dock, providing no enemies are present, would have been wonderful.

Overall, the game is moderately entertaining. If you can get past the hyperspace hastle, there seems to be a good story here.

PICTIONARY

Like many other popular family board games, Pictionary has made it to the home computer screen, courtesy of Broderbund Software. While the conversion is solid, and includes nearly all the features of the board game, a number of the board version's aspects do not fit well within the computer environment making the whole conversion questionable.

First the good points. The programmers managed to fit the entire playing board on a single screen and, while it won't win any graphics awards, it is crisp, clear, and attractive. Either the players or the computer can draw the clues using an on-screen drawing pad equipped with a wide range of provided tools. As can be expected, the computer rolls the dice, moves the pieces, and keeps score.

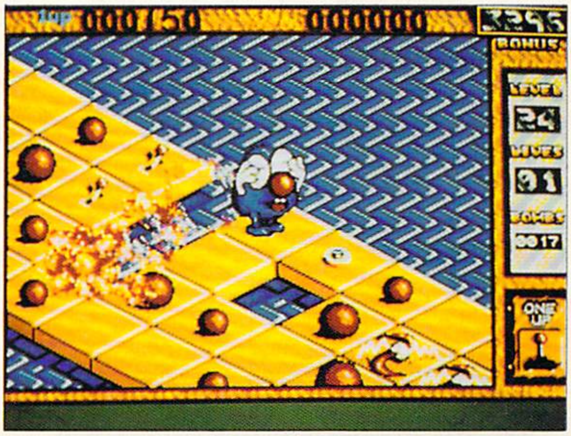
But the game falls short in a serious way. One of the most critical aspects of the game—guessing what is being drawn—is shortened to a one-guess proposition. The general game progression is as follows: with the computer drawing, the player (or team), when they think they know the answer, signal as such by pressing the spacebar. After confirming that they indeed would like to make a guess, the entire picture is drawn and the player is informed of the correct answer. The player (or team) is then prompted to inform the computer whether or nor they guessed correctly.

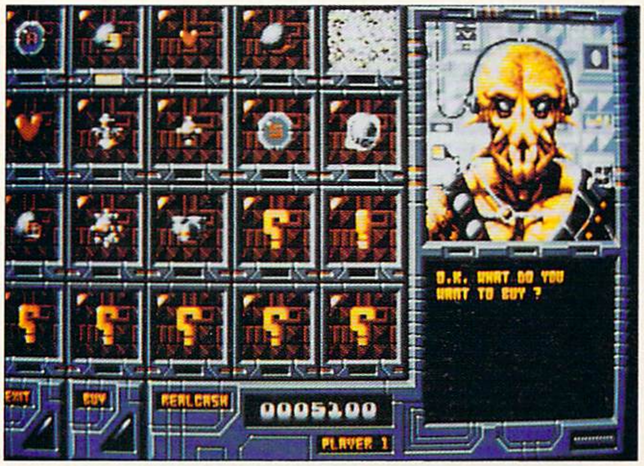
While I can handle the required honesty, I found so much of the guessing aspect missing that the game was not worthwhile. Several people or teams can compete at the same time, so the computer could be used for a face-to-face game. But since the bookkeeping during the game is so simple, the board game is a much better alternative. But I suspect that the developers were more interested in the Pictionary name than in providing a truly entertaining and challenging computer game. Save your money and buy the board game.

EA TWO PACK: XENON 2 & BOMBUZAL

Next is a dual game release from Electronic Arts. BrainBlaster, which contains two different arcade action games—Xenon 2 and Bombuzal, does a good job of living up to its name.

(continued on page 91)



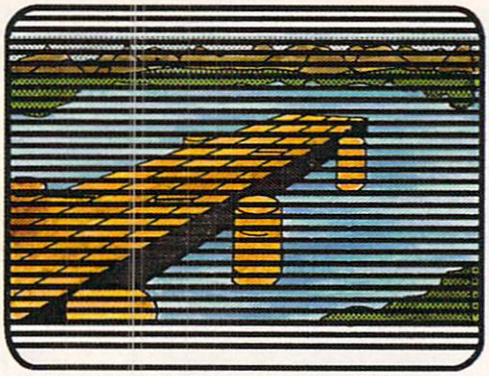

O.K. WHAT DO YOU WANT TO BUY ?

top to bottom: Bombuzal,
Xenon 2, Unreal

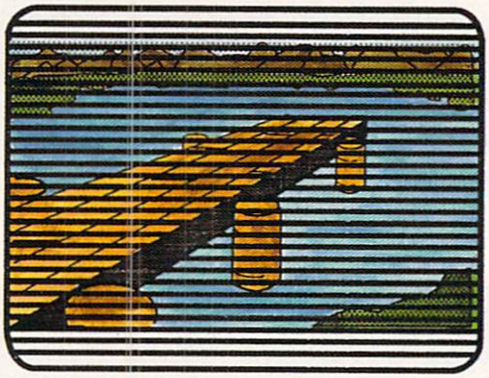
Fixing the flicker

MicroWay's Innovative Solution: The Advanced Graphics Adaptor 2000

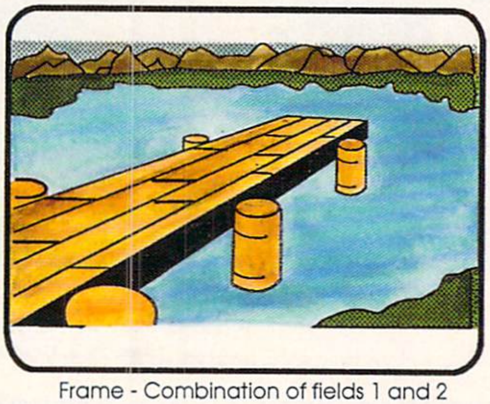
by John Steiner



Field 1 - Odd numbered scan lines



Field 2 - Even numbered scan lines



Frame - Combination of fields 1 and 2

I HAVE ALWAYS BEEN PLEASED—AND PROUD—to show off my Amiga computer, and to tell people what I can do with my A2000HD. I love to show off DeluxePaint and AmigaVision on my system, but my real interest has been desktop publishing. The programs I most often use for desktop publishing are Professional Page and Professional Draw. While these programs operate in a low-resolution mode, they are at their best when shown in 640 x 400 high resolution. At their best in all respects, that is, save one: the screen shimmers and jitters terribly due to interlace flicker. These Gold Disk packages do not even allow you to adjust screen colors to minimize the flicker, as by selecting colors that are less contrasting.

Actually if you use a program in high-resolution interlace for long periods of time, and if you keep the brightness and contrast levels on the monitor turned down, the flicker becomes tolerable, and after a few minutes of work, you adjust to the point where you hardly even notice it. The addition of a smoked plexiglass screen helps even more, and I have published many Professional Page documents while viewing my monitor through a smoked gray screen.

Even so, I was always embarrassed to show those unfamiliar with this phenomenon my page layouts on screen. Almost everyone commented on the annoying flicker, and even when they didn't say anything, I was convinced they were thinking, "Why would anybody want to stare at this screen and do real work?"

In 1988, a company in Kingston, MA released a product that not only ended the flicker-and-shimmer characteristics of the Amiga high-resolution display, but also enhanced the graphics output of the Amiga at all resolutions by eliminating the appearance of noticeable scan lines in the display. That company, MicroWay, Inc., had been—and continues to be—a major supplier of math coprocessors and other support chips for IBM-compatible systems. This product, designed by Peter Silverstone, was to be their first Amiga product. The AGA (Advanced Graphic Adaptor) 2000 plugs into the video slot that sits at the right of the disk drive bays (when facing the front of the computer) and power supply in an A2000 or A2500 CPU.

To understand how the AGA 2000 works, you have to understand a little bit about the Amiga video display system. The Amiga video system is based on the U.S. standard television display specification known as NTSC. An NTSC system displays a television image by dividing each image (called a frame) into two fields. In standard NTSC timings, a frame is made up of 525 scanning lines. Each field is therefore 262.5 scanning lines. One field takes 1/60 of a second to scan, and one frame therefore takes 1/30 of a second to transmit the complete image. The first field scans odd-numbered lines, and the second field scans even-numbered lines.

Though it appears to be cumbersome, this arrangement is necessary due to the nature of television monitor technology. If you tried to scan all 525 lines directly from top to bottom, the image would be displayed in 1/30 of a second, but the top part of the image would start to fade before the bottom part of the image was displayed. By interlacing the odd- and even-numbered scanning lines, the intensity of the display remains more constant, providing a much better picture.

In low-resolution mode (320 x 200), the Amiga displays its image by causing the monitor to scan down the screen once every 1/60 of a second, with each scan exactly overlapping the previous scan. This gives the appearance of a flickerless display, but only allows about 200 lines to be visible. This mode also leaves dark gaps in between each line of the display, making the scan lines more noticeable, as they appear to stand out against a black background.

In high-resolution mode (640 x 400) the scan lines are interlaced, with the first field of 200 or so lines slightly offset from the second field of scan lines. It takes 1/60 of a second to display each field, but each field doesn't get updated until 1/30 of a second later. By that time, the image has completely faded, leaving a dark area which is then repainted during the next frame. This continual fading and repainting is quite noticeable as interlace flicker.

The AGA 2000 deinterlaces Amiga images. It does this by capturing and storing the first field in memory located on the flickerFixer's circuit board. Once the first field is captured,

Why Engineers Chose To Use An Interlaced Display On The Amiga

The ability of the Amiga to generate interlaced images has been what has made the computer such a benefit to the video industry. An RF modulator that let the Amiga operate with a standard television receiver was an early option and design goal.

Other competing computer systems designed in recent years scan their images entirely in 1/60 of a second, rather than 1/30 of a second. That has two advantages: first, the 1/60 display time eliminates the possibility of apparent flicker (our eyes don't react quickly enough to notice); second, there is no longer any need for interlace circuitry. Since these systems do not operate like standard NTSC interlaced signals, IBM and others must provide expensive scan conversion technology to make their signals NTSC-compatible. Many of these scan convertors cost more than an entire Amiga system. Coupled with high conversion costs, these higher scanning rates lead to higher costs in monitor manufacturing. When the Amiga was designed, color monitors that were designed for higher scan rates were two to three times as expensive as the standard NTSC monitor, making the monitor more expensive than the computer system, in many cases.!

A question often asked is, "If interlaced NTSC is our standard for television, and the Amiga uses interlaced NTSC, why is it that the Amiga flickers, yet television pictures do not appear that way."

The answer to that question lies in the fact that television images have so many colors, and so much motion, that most flicker is not readily apparent. It is there, however, and can be very noticeable if you look for it. You can see flicker easily in any television image that itself contains horizontal pattern lines that are smaller than one scan line. Check out backgrounds in television images for pictures of venetian blinds, or similar horizontal patterns. You will see the flicker easily. Most NTSC images don't flicker because there is usually little contrast from one scan line to the next in an NTSC image, which is precisely why turning the brightness and contrast down, or putting a smoked plexiglass screen on your Amiga monitor, reduces the apparent flicker. —*J.S.*

the AGA 2000 begins displaying both the first and second fields in proper scanline order, repainting the entire picture in 1/60 second, with no interlace effect. Since the display is fully updated every 1/60 second (instead of 1/30), there is no perceived flicker (our eyes don't react quickly enough to notice the changing images). Even low-resolution images are improved as the AGA 2000 slightly offsets each field, thereby filling in the dark gaps between scan lines and removing any perception that the screen image is made of lines. AGA 2000 images are smooth as silk, with no appearance of scanlines or flicker.

It's hard to find anything negative to say about AGA 2000, especially after you see the image it provides.

Since the AGA 2000 operates at the 1/60 second scan rate, rather than the NTSC standard 1/30 rate, you are not able to use your normal Amiga monitor. The AGA 2000 board contains a video connector that is designed to operate on either a multiscanning monitor or a monitor designed for IBM VGA graphics. Multiscanning monitors have the ability to scan at several different rates, and most detect the current rate the computer is using automatically, and adjust themselves accordingly. They are more expensive, but also more versatile. The IBM-style VGA monitor is a lower-cost alternative, but only scans at the 1/60 second rate. Using a monitor with just one scanning rate is not necessarily a tremendous disadvantage, since once you begin using the AGA 2000, you may not want to go back to the NTSC scan rates again.

The AGA 2000 package contains four components: the flickerFixer board with mounting hardware, an alignment tool for changing the single adjustment control, a diskette containing alignment patterns and additional software, and the installation and operation manual.

Installation of the AGA 2000 is a fairly simple process. The installation manual explains the process thoroughly. There are no illustrations, though, and some people might appreciate the reassurance that visual images provide. If you are squeamish about opening your computer and installing boards and such, ask your dealer to do it for you—it shouldn't cost much. In fact, your local dealership may not charge anything for installation, if you purchase the board from them.

The only caution that the manual makes reference to is a possibility of serious damage to the AGA 2000 or the CPU if power is applied to the system before the mounting screws are inserted and tightened.

Once the board is installed, you need to connect it to your new multiscanning or VGA monitor. The flickerFixer supports several brands of monitors directly, without the need to make up special adapter cables. According to

Using the flickerFixer With a Genlock

Due to the fact that the AGA 2000 uses signals that are also required by most genlocks, the simultaneous display of genlocked graphics and fickerFixed graphics on separate monitors has until relatively recently been impossible. This has made the use of an AGA 2000 less convenient for Amiga owners who use their Amiga for video applications.

Though I did not have a chance to test it, MicroWay has released a Genlock Compatibility Option board. The board allows both monitor ports to operate simultaneously, providing a fully genlockable signal to the 23-pin Amiga video port, as well as proper video and sync signals to the VGA or multiscanning monitor connected to the AGA 2000. Installation of the compatibility option is accomplished by plugging the small board in piggy-backed fashion onto the AGA 2000 board. No extra expansion slots are used when this option is installed.

The option board is available at a retail price of $50.00.

While the Genlock Compatibility Option board might solve the electrical problems inherent with simultaneous AGA 2000 and genlock usage, you are still required to have an external genlock, since the AGA 2000 resides in the video slot that many professional genlocks (such as the Magni 4004 or the Supergen 2000S) require. MicroWay's solution to the problem is called the DEB 2000 kit. The Denise Extension Board allows you to install an AGA 2000 board while keeping the video slot free for other uses.

The DEB 2000 is a dual-purpose kit. It not only frees up your video slot for use with an internal genlock, it provides the genlock compatibility option. In other words, if you buy the DEB 2000, you won't need to buy the Genlock Compatibility Option board. The DEB 2000 retails for $99.00.

Installation of the DEB 2000 is much more difficult than simply installing the AGA 2000. The installation manual is quite thorough, despite MicroWay's sparse use of illustrations. The DEB 2000 installation can be accomplished in an hour or so. After removing the cover from the computer, you must remove the Amiga power supply and disk drives to gain access to the Denise chip. Use the supplied chip puller to remove the Denise chip from its socket, then install it on the DEB 2000 in the socket provided. Finally, the DEB 2000 plugs into the empty Denise socket.

A cable connected to the DEB 2000 also connects to an expansion socket which, when installed, allows the AGA 2000 fickerFixer to reside in one of the IBM slot areas. The AGA 2000 doesn't plug into an IBM slot, it plugs into the special socket that you install with the DEB 2000 kit. The procedure is made clear by the lone illustration provided in the DEB 2000 manual. A new mounting bracket for the AGA 2000 must be installed, replacing the existing AGA 2000 bracket. This provides more clearance for installation of an IBM board in the adjacent XT slot, and assures compliance with FCC certification.

Once the new expansion slot is mounted to the Amiga motherboard, installing the AGA 2000 is similar to installation in the video slot, and is again concluded by running FF TEST and adjusting the Phasing control. A troubleshooting section of the manual covers most typical installation problems, and their solutions.

If you plan to use your Amiga with a genlock, and use your flickerFixer display simultaneously, you will have to purchase one of these option boards as well. Either of these options adds to the complexity of the AGA 2000 installation, and you will have to consider whether or not you wish to tackle the installation yourself, or have it done by a professional. *—J.S.*

MicroWay, the AGA 2000 is plug-compatible directly to the new Commodore 1950 Multiscan, or any of the standard VGA monitors currently available. The manual even provides a section that lists correct cable connections for those monitors that need some kind of adapter to interface properly.

Once you have your monitor connected, you may have to make an adjustment to the AGA 2000's phasing control. The adjustment is accessed from the rear of your A2000 or 2500 by using the tool that MicroWay includes in the package. The first time you turn on the CPU and monitor, the display may be shifted from its normal position and may look unusual, but it should be recognizable. Insert the supplied flickerFixer diskette into a drive, and run the program named FF TEST. If the image is stable in all regions of the screen, nothing more need be done. If the image is not stable, simply turn the phasing-adjustment screw clockwise until the image is stable. That's all there is to installing the AGA 2000.

It's hard to find anything negative to say about the AGA 2000, especially after you see the image it provides. If you do a lot of work in high resolution you should seriously consider getting one of these. Though the cost of the board (suggested list is $495) may at first glance seem high for a video display board, consider that an AGA 2000 and appropriate monitor cost about the same as similar displays for IBM and Macintosh systems.

If you are into video and want to use a genlock, there *are* two problems you will run into. The first is that many genlocks plug into the video slot, the very slot that the AGA 2000 uses. Secondly, while you can simultaneously operate an NTSC monitor that is plugged into the 23-pin Amiga video port with the monitor that plugs into the AGA 2000, you cannot operate a genlock in that 23-pin video port while the flickerFixer is connected. MicroWay has a couple of solutions to these problems, however (see the related article, "Using the flickerFixer with a Genlock" for details).

Other negative points relating to the AGA 2000 are so minor they are hardly worth mentioning. The least of these problems is screen display of moving objects. Due to the nature of the deinterlacing process, animations that move very quickly may appear to blur. Most of the times I have used the AGA 2000 monitor system to view anims, I really haven't noticed this effect. Only when movement is extremely fast is this any kind of a problem. You can also notice the effect if you move the mouse quickly. The pointer will blur, and if you move the mouse fast enough, you will actually see two pointers. I must again point out that this problem is very minor, and it wouldn't stop me from buying another AGA 2000, even for an instant.

One noticable difference between the standard Amiga display and the display on an AGA 2000 is related to the design of most VGA and multiscanning monitors. All monitors of this type leave a black border around the edge of the screen image. None of the monitors I have seen can display an image as if it were overscanned (running off the borders of the screen). Overscanned images are larger, but there is virtually always a border around the screen when using the AGA 2000.

This is not a fault of the AGA 2000, it's a characteristic of the monitor. Some monitors have a border as large as 1 inch or even more, and others have a much narrower border. I prefer the border to be as small as possible, though a small monitor with a large border provides a very sharp image. I have seen several monitors in use with the AGA 2000, and have found that the NEC MultiSync series of monitors and the Commodore 1950 monitor leave a relatively small border. MicroWay has turned this disadvantage into an advantage by including public domain programs that let you modify the default screen size. With a normal 640 x 400 screen, for example, Professional Page cannot quite display the entire width of text on a page with 1/2 inch margins in 100% view. By running the utility, you can enlarge the default screen width and height, which makes the available viewing area of your document both wider and taller.

I have also used the display to make color slides from Amiga graphic images. The dark gaps between scanning lines stand out when color slides photographed from the standard Amiga display are projected. The velvety smooth backgrounds created by the AGA 2000 help to make color slides appear much nicer when they are projected.

If you use desktop publishing or illustration software, or if you are constantly using high-resolution displays, you really will be glad you invested in the flickerFixer. •AC•

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The KCS Power PC Board

by Ernest P. Viveiros, Jr.

BIG THINGS COME IN SMALL packages...enter the KCS Power PC Board. So small that the board, documentation, and software all fit into the Microsoft MS-DOS 4.01 box. KCS board itself looks like any other A500 RAM Expansion except for the 8088-compatible NEC V-30 microprocessor and the Phoenix BIOS ROM. The board is populated by (8) 4 x 256K DRAMs. Note that all parts are soldered down except the Phoenix BIOS ROM.

What's in the box? Open the box and you'll find the KCS Power Board, (3) Microsoft MS-DOS 4.01 diskettes (including GW-BASIC), (2) MS-DOS 4.01 Manuals, (2) PC Power Board diskettes, and CrossDOS by Consultron. The PC Power Board diskettes contain Power Board system software as well as various freely redistributable MS-DOS programs to get you started, such as a word processor and spreadsheet.

Insert Boot Disk

After unpacking the box, and reading the skimpy (16 pages), but helpful manual, it's time to install the board. Installation couldn't be easier. The KCS Power PC Board simply plugs into the A501 expansion connector on the bottomside on the Amiga 500. Insert the prepared boot disk, and boot her up.

Seconds later you are greeted by the omnipresent Phoenix BIOS copyright notice, and the usual RAM diagnostics. (The KCS board recognizes up to 704KB of memory). When ready, insert the MS-DOS boot disk. Seconds later, you are prompted by the MS-DOS 4.01 copyright notice. Welcome to MS-DOS! (Note that the PC-emulation is not a multitasking process like the bridgeboard in an Amiga 2000, but temporarily takes over the Amiga.)

A>

This is no software emulator. This baby acts and feels like you're working with a regular IBM PC/XT-compatible. Just about every detail of the system configuration is set to meet your needs. The software comes preconfigured with a minimum system to get you up and running right away.

Configuration options are quite extensive, and are better than I imagined. Options include the possibility of installing a maximum of 4 floppy drives, a Monochrome Graphics Adapter or Color Graphics Adapter, up to 3 printer (LPT:) ports, PC Mouse (actually use Amiga mouse), 2 serial (COM:) ports, and even 2 joysticks. You even have the option of partitioning a part of your hard drive for MS-DOS. The only thing missing are the actual ISA slots!

Abort, Retry or Ignore?

The KCS Power PC Board has worked flawlessly, and I have even run a high-octane game on it. Most importantly, I have never had a bomb or a crash. There was obviously a lot of good design behind the engineering of this peripheral. If you do happen to hang up a program, you can reboot the PC/XT-emulator only by pressing the standard Ctrl-Alt-Del keys.

The KCS Power PC Board provides a great opportunity to get access to the thousands of programs in the public domain which are available for the IBM. This is especially good for students who like the Amiga for it's power and graphics, but are required to have access to an IBM PC for schoolwork.

It's an Amiga RAM expansion too!

There is no such item as the perfect one-board-does-it-all expansion peripheral. The board does a superb job as a PC/XT-emulator, but there are a few idiosyncrasies with the board as an Amiga 500 as a RAM expansion peripheral, which you should consider.

First, although the KCS Power Board logo boasts that the board contains 1MB RAM, only 512K is used as expansion RAM. The other 512K RAM can only used as a hardware/software recoverable RAM disk (KCSRAM). One problem is that KCS does not guarantee that the 512K of expansion RAM is 100% software compatible, but they do include instruction for adding an external switch to turn the expansion memory on or off. Additionally, because version 1.00 of the RAM disk software is not fully adjusted for the presence of the DMA hard drive, it is recommended that you do not install the RAM disk if you use a DMA hard drive such as the A590. Also, the KCS Power Board does not support additional on board RAM expansion. You can however, add more RAM using third-party expansion devices

Plug the KCS Power Board into an Amiga 500's A501 expansion connector and you'll get an additional 512K FAST RAM, a 512K RAM Drive, a battery-backed clock *and* an IBM PC/XT-compatible emulator running MS-DOS 4.01?

which use the expansion connector on the side of the Amiga 500.

One advanced feature that the board does not support, is the Super Agnus 1MB CHIP (graphics) memory expansion which is found on the advanced memory expansion boards. This isn't a big deal, but is important if you plan to do high-octane graphics with the Amiga. Finally, you should also be aware that the battery-backed clock is not compatible with AmigaDOS setclock command, however a program to set the hardware clock (PCClock) is included.

What are you buying?

The KCS Power PC Board can be a good choice, or a bad choice, depending upon what you are buying. If you have an Amiga 500, and need IBM PC/XT software compatibility without buying a stand-alone PC-compatible or an Amiga 2000 with a bridgeboard, then the KCS Power PC Board is definitely a good choice. On the other hand, it may not be a good choice to choose the KCS Power PC Board if you primarily use your Amiga to do heavy duty graphics, and need a solid memory expansion that's CHIP RAM expansion capable. In any case; remember, don't buy it because it would be neat to have it... buy it because you'll use it!

•AC•

KCS Power PC Board

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Mindware's 3D Text Animator:

Entry-level text animation, and beyond

by Frank McMahon

FOR YEARS, ANYONE WISHING TO CREATE ANIMATED 3-D logos and moving 3-D text had to journey into a large and perhaps complex program such as Sculpt-Animate 4D, Videoscape 3D, or Turbo Silver. While none of these are specific text animation programs, over the years they have all included options for handling 3-D letters and numbers. "Easy" and "automatic" are not words that spring to mind in terms of using these programs to roll and fly 3-D text objects.

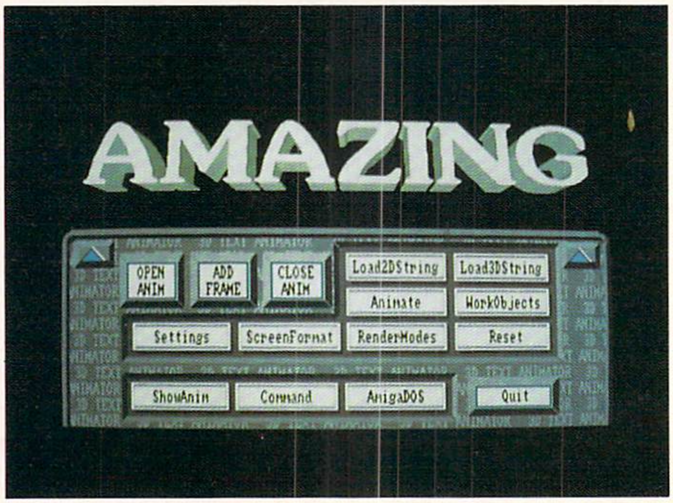
However, Mindware has now come out with the third program in their "Video Solutions Series", entitled 3D Text Animator. The program is a dedicated 3-D text animator (that's all it does), meaning you no longer have to purchase a "do-all" animation system if all you want to do is spin some 3-D title graphics. And although I have described it as an "entry level" 3-D text animator, it still is a powerful program with excellent results. It just happens to be the only 3-D text program I would recommend to a beginner just getting into 3-D text manipulation.

WHAT IS 3-D TEXT?

Before going over how 3D Text Animator works, it should be made clear exactly what 3-D text is. For those who regularly use DeluxePaint III, you have no doubt experimented with the move requester and breezed through the included tutorials, which allow you to create spinning and flying text and logos. You are actually animating brushes, rather than objects—brushes which are only of 2 dimensions, width and height. When they rotate sideways they disappear because they lack the third dimension, depth. They also cannot correctly represent light source reflections. 3-D text strings are made up of objects that have depth, and most good 3-D programs are able to treat them as real objects in a 3-D universe, enabling them to simulate reflected light by shifting through various palette shades as they are moving. 3-D words moving through space always gain much more attention in a video or animated production that do 2-D characters, and 3D Text Animator allows anyone to produce quick animations with the ease of a 2-D program, while lacking only some of the features included in the higher-end Amiga animation systems.

PICKING OUT THE FONTS

After starting up TASS (a parent operating system used by most Mindware products that includes pop-up menus and context-sensitive, on-line help) and then 3D Text Animator, the first thing to consider is what font set you would like to use. The program comes with a default set



Rendering a frame in "Filled" hi-res mode from the 3D Text Animator main interface screen.

which is very detailed; unfortunately, it brings with it extra processing time. I much prefer the alternate set, which is much simpler as far as structure goes, but still very respectable. In fact, the alternate set will give you results very quickly, excellent for those with only 1 meg. All 3-D text objects are made up of "facets", which are smaller "building bricks" (that look more like triangles than bricks) of the actual letter or number. The more "bricks", the longer it takes to render. Mindware has addition sets of 3-D fonts available (promised to ship shortly, along with the new 68020 version of 3D Text Animator), but there are also many separate 3-D text data disks available from various companies that are fully compatible (after being converted, using Interchange from Syndesis).

But wait folks (*now* how much would you pay?)—the program ALSO has a converter option that allows you to convert to 3-D any Amiga-compatible bitmapped font! With the hundreds of fonts currently available in retail outlets and public domain, you'll not run lowon letters too soon. However, as expected, converting "Topaz" to 3-D will still look like "Topaz", so experimentation is in order. Personally, sticking to "built-for-3-D" fonts is best, but we'll get into how these bitmapped fonts are converted in just a bit.

ADJUSTING YOUR TEXT

After choosing the font you want to use, enter the "Load3DString" gadget. The included fonts do not support lower case; however, the program does, and the addition font sets include both upper and lower case. A few moments after typing in a series of words and hitting return, the letters appear on the main screen. Depending on the font, they will appear as 3-D objects. If the font is "flat", they can easily be extruded using the "WorkObjects" gadget.

WorkObjects allows you to also change the color, from an on-screen palette of 4096 colors. All standard resolutions (including overscan) and color planes (2-color up to 4096-color HAM mode) are supported. In fact, you can even shrink your animations to half- or quarter-size screens, which comes in handy for performing test runs. WorkObjects also lets you move your 3-D text around the screen. Chances are, when the text is loaded it's not perfectly centered. "Move" allows COMPLETE control of where your text starts off. You can move it up, down, left, right, and closer to, or farther from the "camera". Even move it along any of the 3-D axes, x, y, or z. This can also simulate the shrinking and enlarging of your text. A simple 5-letter word can be brought "up close and personal" to take over the entire screen space. Or, you can do actual-size manipulation by using the extrude gadget on various object axes.

The only drawback is that all this moving, extruding, and rotating is done by shifting a slider or typing in a certain amount of degrees, negative or positive. It takes awhile to not "overshoot", and being able to move the 3-D object with the mouse in real time sure would have been a nice feature to include. If you've mastered the Move requester from DeluxePaint III, you're a step ahead with this program, since it works on the same concept. An option to overlay a grid of the various axes is included and helps out a bit. The manual, as with any 3-D program, takes a page or so to explain the axes, and get you into thinking in terms of 3-D.

SPINNING, FLYING, SWOOPING TEXT!

After you center your text and choose the color and resolution it will be in, the next step is to turn on a light source and then figure out what kind of path your text will take. The manual states that "the program offers virtually infinite combinations" of text rotation and manipulation. Boy, are they right! Each letter has its OWN center of rotation, and a text string has an additional center of rotation. That means that each letter in a title or logo can have an independent path, and/or spin, fly or swoop each in a totally unrelated direction! You can have all the letters spin in from different directions and land perfectly aligned, or have a full page of independent, twirling letters. Doing this in a program such as Sculpt-Animate 4D or Videoscape could take forever, whereas here it can be programmed in under 5 minutes!

It's possible to adjust the light (only one stationary light source per animation) to appear anywhere in relation to the object. It can be to the left or right, or in front or behind. This is accomplished by sliding a small white square in the light gadget box for position and moving a vertical slider to adjust whether the light is in front of, or behind (as in "backlit") the text objects. It's not possible to do this with pinpoint accuracy, and there is no way to adjust the color or intensity, but with this program you'll soon discover you're less concerned with the lighting (it's pretty automatic) and more concerned with different animation effects.

ANIMATION RENDERING

Once the light is set, you enter the "Animate" gadget on the main screen. Here is where you set the amount of frames, and also type in the rotation. You can have text rotate, say, two turns, by just typing in a 2; or, you can have the text move a certain amount of degrees on the x, y, or z axis. The way this movement is handled is a little different than in DeluxePaint III. In DeluxePaint III, you type an amount into the x axis and the object moves out along the x axis. Here, you type in how the text will rotate along either the letter's center or the word's center, and then choose IN, OUT, or LOOP. IN brings your moving text in from off screen, OUT moves it off screen, and LOOP keeps the text objects stationary in "space", while the typed-in rotations and movement play out. Since the locations to where the text goes IN or OUT can be set by moving the standard small white square in a larger box (representing the 3-D "world"), in the end all the paths DeluxePaint III can do, 3D Text Animator can do as well. 3D Text can even duplicate the "trails" feature of DeluxePaint III, which creates a trail of text positions in the same display.

After your coordinates are set, hit Animate and watch your animation draw, frame by frame. There are several modes of animation, with just as many rendering speeds. A lo-res, 2-color, non-overscan

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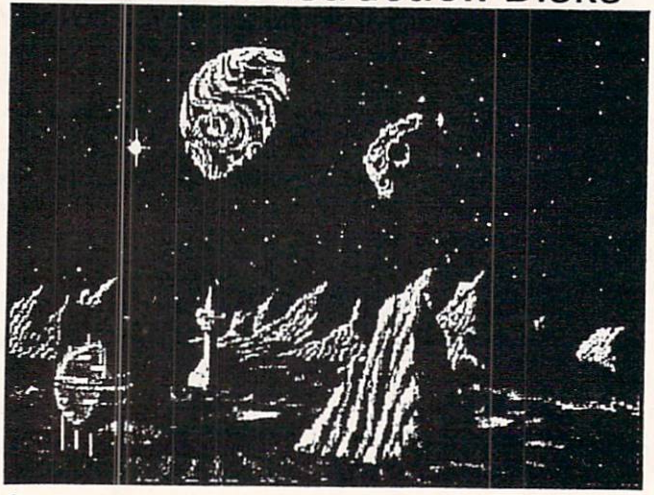

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animation of 10 frames snaps by in no time, while a higher-res HAM mode animation can take quite a bit longer. The program is no faster or slower than any other program that renders 3-D frames. There are several options that allow you to predetermine approximately how much time the program should take to render frames: the more time spent, the better the final images. Quickest is probably the "Wireframe" mode, which only produces a one-color representation of the animation (make sure you switch to 2 bitplanes for added speed). Keep in mind that this is not the same as a wireframe "preview". This is a mode like the others and creates an anim file. There really is no "quick-preview", or any way to render only certain key frames.

A quarter-size, lo-res wireframe animation does, however, make a great quick preview and produces a small and disposable anim file. "Outlined" mode is the same as Wireframe, but with the hidden lines removed to give a more usable 3-D wireframe."Filled" is the default rendering mode, where all the text objects are colored with light source reflections."Dither" is a nice alternative which allows you to use less colors (for faster rendering) while adding some light-effected texture. "RayTrace" mode offers more phong shading than ray-tracing, but it provides an enhanced look, if you have several hours to kill.

MORE GOODIES

There are lots of little features that add up to more power, for better animations. "Enhance" will crosshatch all your letters, or just a single word. This marks them with parallel lines. The "FFO" (Front Facets Only) setting makes sure only the facets facing the camera (observer) are drawn. This option would be turned off for flat letters. "Genlock", through software, can turn color 0 on or off, depending on whether you want video to show under your text animation (a genlock is needed, of course). "DiskAnim" allows you to play your animations from anywhere: RAM, hard drive, floppy, etc., keeping in mind the animation will only run as fast as the transfer speed of the device. Moving the position of the letters is easily done with the "WorkObjects" gadget. In addition to letting you change the order, "WorkObjects" also lets you move individual letters prior to the start of the animation. This makes logo creation quite easy. "Background" lets you change the color of the background at any time.

"Load2DString" brings up a font requester from a selected disk and allows you to type in a string using a regular Amiga bitmapped font. This 2D string is treated as one object and can be extruded to 3-D. If you want to convert separate letters and fonts as well as have editing features, a font editor called "Fed" is included. TASS must be invoked first, and "Fed" can only be run from the CLI. A separate section in the manual goes into detail on how to smooth out and edit the bitmapped fonts then save them as 3-D objects. Those with ARexx can bypass editing fonts by the letter, and convert a whole set of fonts automatically.

3D Text Animator is fully ARexx-compatible. "Tiny3DText" is a slightly smaller version of the program included for those with low-memory machines. Piecing an animation together using a series of frames is also possible, as is creating ARexx macros. Mindware also states it will (for a fee) construct a copy of the program, configured with one of their available fonts sets. The back of the manual includes additional information on converting existing fonts from various animation programs (Sculpt-Animate 3D/4D, Videoscape 3D, etc.) as well as contacts on where to order 3-D fonts made by different companies.

CONCLUSIONS

Let's cover the bad news first. As with their other programs, Mindware has once again included pages of revisions and additions to the manual that must be printed out before you are able to work

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with the program itself. That might not be so bad if this addenda was better organized, but it's more like 6 pages of rambling info, some of which is essential to using the program correctly. I'm not sure if Mindware's programs are being rushed out before they are ready, or if the programmers are working so hard that even after each project is in the can, they are still working on revisions and improvements. I will assume the latter, but jumping from the revisions docs to the manual and back again is definitely frustrating.

The manual could use some work also, providing fewer tutorials and more concrete reference sections. The manual indicates that to use a different font set you must copy the disk, delete the existing font set, and copy the new one into the correct drawer. I used CLIMate and had no problem, but some users may struggle with CLI and it will take a while going that route, with all the letters to delete and copy.

There is no way to tell if certain commands are turned on or off. On/Off gadgets that change color when selected are badly needed in some parts of this program. More cancels are needed, too. You are sometimes forced to choose something if you enter into a gadget by mistake. There is currently no anti-aliasing or texture support. Finally, there could be an option to load *any* 3-D object (such as a Sculpt object) into the program for the purposes of animating it.

AND THE GOOD NEWS? PLENTY!

The manual takes "time out" to explain such terms as "Delta Compression" and "Macros". For Mindware to include a list of other companies (with addresses) that sell 3-D fonts is excellent; most companies in Mindware's position would simply use that space to hype their own 3-D font line.

On-Line Help is available everywhere just by hitting the Help key. The TASS system of pop-up windows certainly beats Workbench. The program is easy and fun to use, and its ranges of colors and resolutions and modes, from "Wireframe" to "RayTrace", make it suitable for beginners' as well as professionals' demands. The animations come out sharply detailed and smooth.

I mentioned earlier that this is the only program I would recommend to a beginning 3-D text animator. I had always hoped there would be a program that allowed a simple, basic means of animating 3-D text without forcing the user to learn an entire 400-page manual of related information first. Now that program has arrived. It is 3D Text Animator. •AC•

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Barrie Ontario Canada L4M 5R3
(705) 737-5998
Inquiry #214

AC Disks

Source code and executable programs included for all articles printed in *Amazing Computing*.

#1 AC V3.8 and V3.9

Gels In MultiForth Parts I & II: Learn how to use Gels in MultiForth. Author: John Bushakra

FFP & IEEE: An Example of using FFP & IEEE math routines in Modula-2. Author: Steve Faiwiszewski

CAI: A complete Computer Aided Instruction program with editor written in AmigaBASIC. Author: Paul Castonguay

Tumblin' Tots: A complete game written in Assembly language. Save the falling babies in this game. Author: David Ashley

VGad: A gadget editor that allows you to easily create gadgets. The program then generates C code that you can use in your own programs. Author: Stephen Vermeulen

MenuEd: A menu editor that allows you to easily create menus. The program then generates C code that you can use in your own programs. Author: David Pehrson

Bspread: A powerful spread sheet program written in AmigaBASIC. Author: Bryan Cately

#2 AC V4.3 and V4.4

Fractals Part I: An introduction to the basics of fractals with examples in AmigaBASIC, True BASIC, and C. Author: Paul Castonguay

Shared Libraries: C source and executable code that shows the use of shared libraries. Author: John Baez

MultiSort: Sorting and intertask communication in Modula-2. Author: Steve Faiwiszewski

Double Playfield: Shows how to use dual playfields in AmigaBASIC. Author: Robert D'Asto

'881 Math Part I: Programming the 68881 math coprocessor chip in C Author: Read Predmore

Args: Passing arguments to an AmigaBASIC program from the CLI. Author: Brian Zupke

#3 AC V4.5 and V4.6

Digitized Sound: Using the Audio.device to play digitized sounds in Modula-2. Author: Len A. White

'881 Math Part II: Part II of programming the 68881 math coprocessor chip using a fractal sample. Author: Read Predmore

At Your Request: Using the system-supplied requestors from AmigaBASIC. Author: John F. Weiderhirn

Insta Sound: Tapping the Amiga's sound from AmigaBASIC using the Wave command. Author: Greg Stringfellow

MIDI Out: A MIDI program that you can expand upon. Written in C. Author: Br. Seraphim Winslow

Diskless Compiler: Setting up a compiler environment that doesn't need floppies. Author: Chuck Raudonis

#4 AC V4.7 and V4.8

Fractals Part II: Part II on fractals and graphics on the Amiga in AmigaBASIC and True BASIC. Author: Paul Castonguay

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C Notes: A small program to search a file for a specific string in C. Author: Stephen Kemp

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Cell Animation: Using cell animation in Modula-2. Author: Nicholas Cirasella

Improving Graphics: Improve the way your program looks no matter what screen it opens on. In C. Author: Richard Martin

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C Notes V4.9: Look at a simple utility program in C. Author: Stephen Kemp

1D_Cells: A program that simulates a one-dimensional cellular automata. Author: Russell Wallace

Colourscope: A shareware program that shows different graphic designs. Author: Russell Wallace

ShowILBM: A program that displays lo-res, hi-res, interlace and HAM IFF pictures. Author: Russell Wallace

Labyrinth_II: Roll playing text adventure game. Author: Russell Wallace

Most: Text file reader that will display one or more files. The program will automatically format the text for you. Author: Russell Wallace

Terminator: A virus protection program. Author: Russell Wallace

#6 AC V4.10 and V4.11

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#7 AC V4.12 and V5.1

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#8 AC V5.2 and V5.3

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#9 AC V5.4 and V5.5

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Pictures: IFF pictures from past Amazing Computing issues.

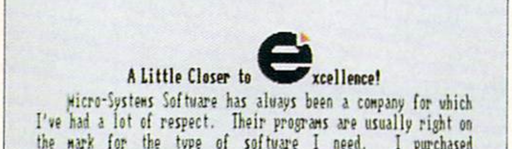
A Little Closer To Excellence:

Micro-Systems Software's excellence! 2.0

by Kim Schaffer

MICRO-SYSTEMS SOFTWARE HAS ALWAYS BEEN A company for which I've had a lot of respect. Their programs are usually right on the mark for the type of software I need. I purchased excellence! when it first came out in January, 1988. The interface initially reminded me of the first "word processer" that I ever saw on the Amiga, Textcraft. I was very impressed then by the editor, complete with color, at least until I got used to it enough to find out that WYSIWYG does not mean "all things included".

excellence! opens with a white screen and a ruler with many symbols, very similar to Textcraft. I thought the original excellence! was a decent program that tried to accomplish a lot, although it was a little too slow for serious word processing. I think excellence! 2.0 has gone a long way to overcome that problem.



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excellence! comes up to speed in Version 2.0.

The speed improvement is evident in the way the program now keeps up with your typing, and if you have an accelerator or an Amiga 3000, it should fly. To put yourself in the fastest mode, select the non-interlaced screen, with the minimum amount of colors. If you are not as concerned about speed, but want to see the most lines of text, the interlace mode can be chosen through the Preferences menu. The program must be restarted, however, for the interlace change to take effect. Colors, file locations, icons and backup preferences are also chosen through the Preferences menu. These selections set the word processing screen to your preferences.

excellence! is not just an editor. There is plenty of power here, especially for writers who want some help in expressing their thoughts. Try the speller, for example. You can turn it on to tell you when you have just misspelled a word, or (if you're like me), you just type as fast as you can, and then go back and correct misspellings when you want a break later.

What if you can't quite find the right word, or maybe you don't know if the word fits? That's when you can rely on what I consider to be one of the program's most powerful features, its thesaurus. Perhaps you've seen a thesaurus in other programs (probably on another computer), but when was the last time you saw the definitions with the synonyms or antonyms? That's right, this thesaurus can help you determine which use of the word you are looking for, then recommend some alternatives, choices, options, or selections. I'm sure you get the idea.

Grammar checkers are no substitute for having someone with good writing skills review your work. But let excellence! 2.0 have a first crack at it. See if the things it finds are applicable to what you are writing. Let it go through the mechanics, and then ask your reviewer to concentrate on the rest. You'll find you get a better reception from your reviewer when you catch most of those "glaring errors" ahead ot time.

Editing is made easy by using the mouse. Double clicking on a word selects the word. If you continue to hold the left mouse button down after selecting the word, excellence! 2.0 selects a word at a time. This also makes for a simple job of deleting or copying, but it doesn't always come out right for pasting, unless you include the spacing. The space at the end of the word is not carried along automatically, and when the word is inserted it is without the space at the end, unless you include it. This is probably not a problem, unless you are used to a word processor that automatically carries the space.

A related problem I had in the beginning was in acclimating myself to which Amiga key to use with the "v" key to insert over some highlighted text (you must use the right Amiga key).

Graphics are supported in excellence! 2.0 by the insert command. The graphics are "converted" to match the screen bitmap, and can be sized and cropped to fit.

The program does have a few shortcomings in its graphics capabilities, however. Text cannot be made to flow *around* graphics. Neither does excellence! 2.0 flow the text *in front of* graphics when there is insufficient room on the page to print the full picture. The width of graphics may not appear accurately on screen (depending on the horizontal resolution of the screen), but graphics will be in proper perspective when they are printed out using the graphic print option, unless you change the perspective.

excellence! 2.0 supports just about any type of font you want to throw at it, and more than you would ever want to use in any single document. You may try many different fonts to test it, but don't use anything over 24 points, because it won't work.

Text justification, spacing, and tabs are set through the use of rulers. The rulers can be edited for each paragraph and can be copied to other paragraphs. Rulers are also supported for headers, footers, and footnotes.

Headers and footers can also be set up for even, odd, or all pages. Footnotes can be numbered sequentially throughout the document, or you can assign a number, letter, or symbol to each as they are created. The starting numbers for headers, footers, and footnotes are set up in Page Setup. The Page Setup also controls the pitch, number of columns, and margins. The font(s) you print in and the print modes, as well as graphics resolution, orientation, and the specific pages to be printed, are all selected through the print menu.

You can print in four different modes. Draft uses your printer draft font and does not include graphics. NLQ uses the printer fonts and includes graphics, but you must use the Topaz 11 point font with 12 point spacing. Graphics will print the fonts that you use with the graphics, but the fonts are very rough on the page and it will not help to print any higher than 150 dots per inch. The final mode, PostScript, represents a big advantage if you have a PostScript printer, and just additional confusion if you don't. Micro-Systems does, however, provide four PostScript fonts that are useful if you have a PostScript printer.

Printing can be difficult to set up. If you use the NLQ print mode, the superscript and subscript will not select the smaller font, nor can you select the smaller type on screen and have it printed. One especially nice thing about the printer setup is the ability to print in reverse order. If you have a cut sheet feeder similar to the one on the HP LaserJet or DeskJet printers, you can reverse the order so the printout will be in the correct order, rather than having to reshuffle.

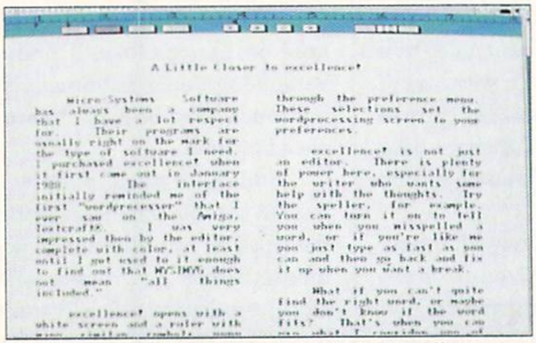
excellence! 2.0 has several other features definitely worth mentioning. Both the Index function and the Table of Contents function work well. Just highlight the word or words you want, and select either the Index or TOC function. To actually generate the index or the TOC, just select the menu and then use the insert function to add it to your text.

There are several insert functions that can help you. For example, you can enter the date via a single selection. Same for the time and page number. If you have trouble keeping track of the latest version of your draft, these functions are helpful, changing as the document changes.

The hyphenation menu allows you to find a hyphenated word, change the word that you have selected to be hyphenated, or hyphenate all. It does not turn on hyphenation continuously.

excellence! 2.0 also has a simple math support—it is able to add, subtract, multiply, and divide. I got these functions to work, but only when my equations had no spaces in them. This function is so strict that I find little use for it, other than as a quick calculator.

Finally, the sort function can also be useful, especially for lists, such as phone directories, addresses, or merge files. The function sorts paragraphs in ascending or descending order.



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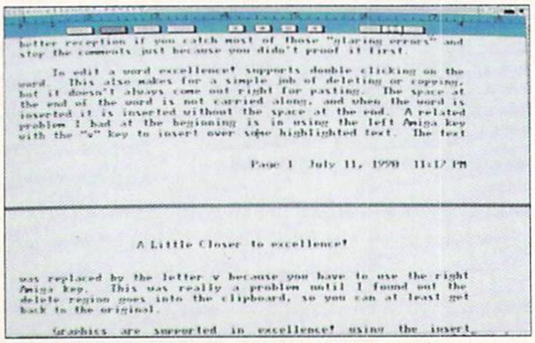
What if you can't quite find the right word, or maybe you don't know if the word fits? That's when you can

One- to four-column formats, text justification and spacing are set using rulers.



better reception if you catch most of those "glaring errors" and stop the comments just because you didn't proof it first.

To edit a word excellence! supports double clicking on the word. This also makes for a simple job of deleting or copying, but it doesn't always come out right for pasting. The space at the end of the word is not carried along, and when the word is inserted it is inserted without the space at the end. A related problem I had at the beginning is in using the left Amiga key with the "v" key to insert over some highlighted text. The text

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A Little Closer to excellence!

was replaced by the letter v because you have to use the right Amiga key. This was really a problem until I found out the delete region goes into the clipboard, so you can at least get back to the original.

Graphics are supported in excellence! using the insert

Page number, date and time of day can be displayed within document.

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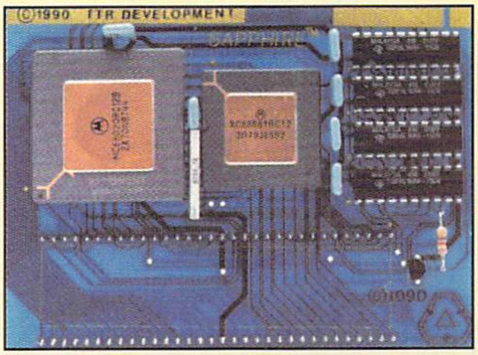

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Circle 126 on Reader Service card.

(excellence!, continued)

excellence! 2.0 is lacking a few features. For example, when you select Find/Replace, it does not open the string input gadget tool automatically. You cannot use the Right Amiga-X to clear the string gadget, you must click on the selection gadgets (rather than the first letter mnemonics that most of the other requestors use), and the clipboard cannot be used to insert strings into the find/replace function. This doesn't mean that the find/replace tool does not work well, it just takes a little extra effort.

Other things I would like to see added include the capability for a timed backup, automatic paragraph numbering for outlining, tables of illustrations, or endnotes.

The only error I've found is a slight problem when displaying the markers (formatting codes). The display does not show all the text that is on the line, being cut off at the right margin. This only occurs in the "show markers" view, and is not the normal mode.

excellence! 2.0 requires one megabyte of memory and comes on three disks. The program and most of the support files are on one disk, with the thesaurus and spelling files each on their own disk. If you have enough memory, you can load the dictionary into RAM: and speed up the performance. If you have a hard drive, excellence! 2.0 can really take advantage of it, and it loads much more quickly.

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Circle 114 on Reader Service card.

One final topic related to set up of the program. MSS has included a menu called "Glossary". I think a closer name for it would be Macro. In an easy-to-understand format, excellence! 2.0 lets you assign strings of commands to most key combinations. Some of the key combinations that I have assigned are actually combinations to some of the other word processors I use on "those other machines". One minor inconvenience of this feature is that combinations are bound to the *results* of keys rather than the *locations* of keys.

A B C

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Circle 115 on Reader Service card.

For example, the number 9 on the keypad of an Amiga 2000 is also often used as a "Page Up" macro. But using the MSS Glossary, it is bound to the number 9, and if you press the 9 on the keyboard you get the same result as the 9 on the numeric keypad. This is a relatively minor problem, as there are other ways to do the same thing already built into the program.

A branch function is introduced in this latest version of excellence!, as well as a way to call other glossary definitions directly. The programming is all done using text, with the document screen used as the scratchpad. It is easily learned, and quick to implement.

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excellence! 2.0 may not be perfect, but it is a very powerful program with an incredible amount of features, and while I would rather have a few more of the features found in programs like WordPerfect for the IBM, or Word for the Mac, excellence! 2.0 does hold its own. In fact, when you consider the definitions in the thesaurus and the benefits of having a grammar checker built in, maybe it's even a little better.

Micro-Systems Software has a solid program here. If you're looking for a good word processor, maybe you should find excellence! 2.0.

•AC•

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Build an Amiga 2000 Keyboard Adapter for the Amiga 1000

And do it for under $7.00!

by Phillip R. Combs

Do you know where you can get a perfectly good A1000 CPU with a mouse but no keyboard?

Is your A1000 keyboard on its last legs?

Do you use an IBM at the office and an Amiga at home, and often press wrong keys at critical times due to keyboard layout differences?

YOU CAN CONSTRUCT A SIMPLE adapter for less than $7.00 (at Radio Shack prices) that allows the use of an A2000 keyboard on the A1000. Not only will you get a better-feeling keyboard with a "standard" IBM layout, but you ensure the use of your computer for years to come.

SOME FACTS

Few people realize there are no electrical differences between A1000 and A2000 keyboards. The A1000 keyboard connects to the CPU with a telephone modular handset cable (known as an RJ11), while the A2000 uses an IBM style 5-pin DIN plug and cable. All four conductors of the A1000s cable are used, while only four of the five A2000 DIN plug pins are used. It doesn't matter that there are more keys on the A2000 keyboard. The software that interprets keypresses and translates them for the computer resides on your Workbench disk, not in the keyboard. It is easy to construct and connect the adapter; this article will show you how.

THE NUTS AND BOLTS

Figure 1 shows the pinouts of the A1000's modular keyboard jack and the A2000's DIN jack. The definitions for the A1000 comes from the Addison-Wesley *Amiga Hardware Reference Manual*, while the A2000 information comes from the A2000 service manual. Despite the minor name differences, the signals that both jacks carry are the same. All that is needed is a straight-through cable with a 5-pin DIN jack on one end, and a telephone handset plug on the other.

If you consult the A2000 service manual, you will notice a difference between the signal callouts there, and the ones in Figure 1 here. That is because the A2000 schematic is incorrect! This meant disassembling the A2000 keyboard and poking around with an ohmmeter, for the purpose of doing this project correctly.

There is an important distinction in modular connectors to note here. The plug on your telephone cord that connects to the wall is a standard modular connector. The plugs on each end of your handset cord are called handset modular connectors. These connectors are smaller than the standard types. While you can go down to K-Mart and pick up standard modular connectors and crimp tools, the handset variety are more difficult to find.

To make this project as simple to construct as possible, I opted for the brute force method. I purchased a telephone handset cable at Radio Shack, along with a 5-pin DIN inline jack. I then chopped a four-inch length of wire that included the connector from one end. This was then wired to the DIN jack. The Radio Shack part numbers for these two items are shown in the Parts List on the following page. In addition to these parts, you will need the following tools: a soldering iron (25-35 watt) and rosin-core solder, pliers, wire strippers, hobby knife, small wire cutters, and an ohmmeter.

ASSEMBLING THE CABLE

Refer to the schematic shown in Figure 2. The 5-pin DIN jack is viewed from the solder side. The modular handset cable is viewed from the bottom. The four copper conductors face you, the plastic tab faces away from you, and the cable dangles toward the floor. The wires in my cable were different colors, and those are indicated in the figure.

Now, follow these steps:

1) Cut the handset cord about 4" from one end. Then, disassemble the inline DIN

jack by pulling the center (the part with the five holes) out of the sleeve. You will then have four parts—two silver half-circular metal pieces, the plastic jack, and the outer sleeve.

2) Slide the sleeve onto the 4" wire you just cut, smaller end first. This sleeve will slide over the jack and protect your wire connections later.

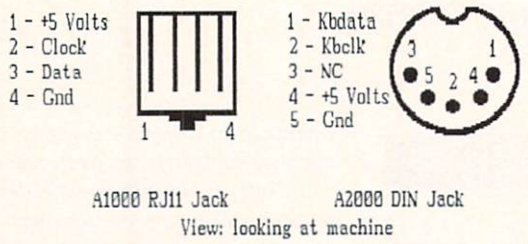


Figure 1. A1000/A2000 Keyboard Jack Pinouts.

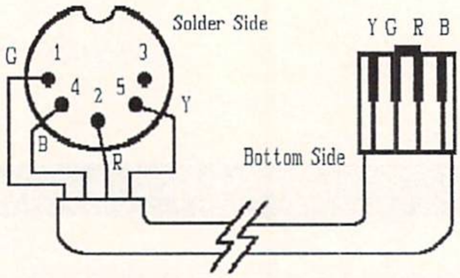


Figure 2. Wire Connection Diagram.

3) Carefully trim about 3/4" of the cable's outer jacket away. Do not nick the insulation of the inner wires.

4) Next, trim about 1/8" of insulation from each of the four inner wires. Be very careful. The inner conductors of these wires are actually thin foil strips wound around a nylon core. After stripping the insulation away, tin the exposed conductors with solder. The nylon core will burn somewhat. Apply a little heat and solder, then back off. Repeat the process until the conductors are properly tinned.

5) Now, you must identify the wires. Hold the modular plug as described above, being careful not to let the DIN jack's sleeve slide off. Look at the area of the plug between the four copper-colored conductors and the cable. You should be able to see each wire's color through the plastic, as well as which conductor each wire connects to. If your wires are different colors, you are in luck. Simply substitute your cable's wire colors for those shown in Figure 2.

If your wires are all one color, don't panic. The four wires lie side-by-side for the length of the cable. You simply need to identify which one is the "B" wire, and the other wires will fall into place. You have a fifty-percent chance of finding it the first time you try, as it is one of the two outer wires in the cable. Using the ohmmeter, identify this wire and solder it to pin 4 of the DIN jack. Next to the "B" wire will be the "R" wire, which goes to pin 2. The "G" wire will connect to pin 1, and the "Y" wire will be soldered to pin 5. After connecting all the wires, use the ohmmeter to check your work, and ensure that you made good connections.

6) Next comes assembly of the jack. Locate the semi-circular silver piece with the smaller U-shaped end. This is the jack's strain relief. Opposite the smaller U-shaped end, you will see a thin, 1/4" long metal piece extending from the strain relief. Look carefully at the jack's center (the part you just soldered wires to). There is a square channel on the edge, running from front to back. Place the jack onto this strain relief so that the thin metal piece lies in the square groove. There are molded bumps on the jack's edge that match the holes in the strain relief. Crimp the U-shaped piece around the cable's outer jacket, making sure you allow some slack in the loose wires. This is very important, as these wires should not be stressed.

Place the other metal piece over the top of the jack assembly, so that the inner wires are now covered back to the crimp. The remaining bumps on the jack's edge will go into matching holes on the metal piece. You will have to hold this assembly together for the time being. Next, look at the sleeve you slid onto the cable in the first step. You will see a squared, U-shaped cut in the sleeve. You should also see a square hole in one of the jack's metal pieces. Slide the sleeve up over the jack assembly, aligning the U-shaped cut and the square hole. Push the jack assembly into the sleeve until it is even with the sleeve's end. This completes your adapter.

SOFTWARE CONSIDERATIONS

No adjustments to your Workbench software are necessary to use your new keyboard and adapter. The correct keyboard driver, or keymap, should already be selected on your Workbench disk, and can be found in the Devs/Keymaps directory. For Workbench 1.2, all keymaps should be in this directory. The preselected keymap is USA. For Workbench 1.3, only the USA1 keymap may be found in the Devs/Keymaps directory. All others are located in the Devs/Keymaps directory on the Extras disk. Should you wish to experiment with different keymaps, consult your Workbench manual for more details.

HOOKUP

With the A1000's power off, insert the A2000 keyboard plug into your new adapter, then plug the adapter's modular end into your A1000. Turn on the power and boot as normal. You should find that your new keyboard will work as well as your old one, but will feel much better to your fingers.

Some people may be wondering how useful this project can be. Despite Commodore's efforts to remove the A1000 from the market, a lot of life is left in this machine. Clearly, there are those who are so attached to their A1000s, that they will never give them up. Others may want to donate their A1000s to schools, charities, or computer-hungry youngsters.

No tool is obsolete as long as a use exists for it. A new saw may be shinier and may cut better than your old one. However, adding a new blade to your old saw can give it new life—and save you money, too.

Radio Shack Parts List

Qty.	Part Number	Description
1	274-006	5-Pin DIN Inline Jack
1	279-308	Beige Coiled Handset Cord

•AC•

(SAS/C, continued from page 22)

ably integrated environment for themselves. LSE joins the rank of those editors that have implemented ARexx ports.

There are some features that I feel have been left out of LSE all along. Only some of those have been addressed in this new release. One of the features I like in a configurable editor that didn't make it into this release is the allowance for the redefining of the arrow keys. I like to use the ALT key to modify the arrow keys, but evidently since the IBM PC-type keyboard is not capable of sending unique keycodes for those keystrokes, LSE does not provide the ability to completely customize that part of its operation. I look forward to the version when this gap is closed. All in all, the degree of integration that LSE offers has been enhanced substantially.

Other programs in the compiler support files area have been fixed or enhanced. The profiler, for instance, now has the ability to understand multiple code hunks and, as such, is much more useful in large projects.

The full-screen debugger CPR has had a minor face lift itself. More sundry bugs have been fixed, and the ability to operate from the Workbench has been added. You can now invoke your code to be tested thinking it has started from either the CLI or the Workbench, regardless of which environment you invoked CPR from. This is nice for those folks who need to test Workbench startup code, or test CLI startup code from the Workbench.

The global optimizer checks for ^C (control-C) more frequently. This is a welcome change to users who have waited on GO to break out of a long, slow procedure just to restart the compiler after fixing a minor problem.

LIFE UNDER THE NEW GUI

A GUI (Graphical User Interface) provides a way to manipulate a computer without necessitating the use of a CLI (Command Line Interface), which is what MS-DOS or CP/M utilize. Workbench is an example of a GUI. Most language compilers have originated from a CLI-type environment, and thus have been designed with this environment in mind. The Amiga was the first personal computer to offer the microcomputing public a choice between the two types of user interface. However, due to the CLI standard, many of the first development tools for the Amiga were written for operation from the CLI, not the Workbench.

But experience has shown that effective development tools can be designed utilizing GUI environments. This is the philosophy that the GUI tools in SAS/C seemed to be developed under. See for yourself in Figure Two, where we see a Workbench 2.0 screen with an open project created by SASCSETUP. Note the presence of the .c and .h files, an lmkfile , and the four icons to initiate procedures in the project. Also note the detailed differences between the icons. The images are unique, depending on the default extension of the file.

The source files test1.c and test1.h are conventional text files in every sense. The icons for these files have LSE as their default tool. Therefore, double clicking on one of them brings the LSE editor front-and-center with the file you selected in the editor's window. If LSE is already running, clicking on a source file merely opens another "window" in LSE and loads the file there. LSE is not invoked more than once.

If you want to create a new file, just click on the LSE icon, enter text for the new file, name the file, and save. LSE will make an icon for you in your current project directory (current directory). The icon creation feature can be disabled easily by renaming the directory named "icons" in the LC: directory.

If you click on the icon named OPTIONS, SASCOPTIONS will be invoked. After setting any options, you have the choice of saving the options to the current project, saving options to anywhere, or saving options as default. The default options are saved in a file in ENV: similar to an environment variable. LC knows to look there for options if they are not found in the current project.

> *"Not only can you select any of the supplied startup modules, you even have the freedom to specify your own startup code."*

The BUILD icon opens a window and calls LC or LMK (if a lmkfile or a makefile is present). All .c files with a newer date than their associated .o files are compiled (like the "-M" switch in LC). BUILD can require you to answer Y or N in response to certain error situations or a ^C break.

The fourth icon is the DEBUG icon. If you instruct the compiler to include debugging information in the executable file, you can extend select the DEBUG icon and the icon for the executable and invoke CPR. CPR then functions as it would, just as if you had typed in the command from a CLI.

With these four icons, there is not much else the average programmer needs to do during the normal development and debugging cycle of development projects. In the event that one wishes to perform additional tasks from Workbench, usually an can be created through LSE containing the commands you want executed whenever you double click its associated icon.

To the programmers who, after seeing all this, still wish to use the CLI as the preferred development environment, the new command line switches in LC, LC1, LC2, and BLINK will be available as before. LC will read the SASCOPTS file which are the saved options specified in the SASCOPTIONS program just the same as if LC was invoked from Workbench. Of course, you still have all the fixes, enhancements, and optimizations available.

COMPATIBILITY ISSUES

Most of the improvements made in this version of the compiler serve to enhance compatibility with the ANSI C standard or address problems limiting such compatibility. There are a few additional functions that enhance the standard library, and certain arbitrary limits have been made adjustable for those who use macros and #pragmas heavily. Changes were also made to speed development of projects such as resident library creation by the addition of linkage options. Most applications should not be impacted negatively due to these changes.

> *"Paint programs, CAD, multimedia, and other big GUI applications now have a new family member."*

However, the official AmigaDOS 2.0 include files have changed significantly. Not only have headers been added to take all the new libraries and function calls into account, but the organization of some of the header files has changed. The new DOS has grown in size and in complexity so much that a new subdirectory has been created to contain all the new DOS header files (they were formally in the libraries subdirectory). The old files were replaced with files that just load the correct files from their new location for you.

If you are using this package on a small 512K, two-floppy-drive system, you may still have trouble accessing all the features of the system, particularly the Global Optimizer. Although it is still possible to use this development system in such an environment, I would not recommend it. It is generally recommended that, to create a serious programming environment, you need at least 1 megabyte of memory and plenty of disk space of some type.

If you have a base configuration and find that you are having an inordinate number of problems due to memory shortage problems, let the folks at SAS know through technical support channels. Perhaps the next version will address the memory usage question.

Be careful about the lack of use of the include file "exec/types.h". In my evaluation, I ran into a problem where a project, expecting the file to have been included, stopped on errors that didn't previously exist because one of my other include files loaded "exec/types.h" for me. I, of course, was using several defines that are in that file, and never realized that I was not loading certain header files explicitly. Which of the DOS 1.3 header files was changed was not important enough for me to hunt the culprit down yet, but it is a problem that any programmers using DOS 2.0 include files with old code may run into. If in doubt, go ahead and add "#include <exec/types.h>" statements to the top of your source files and use the "-ci" switch (single copy of include files) in LC. Forgetting this will increase the length of time it takes to compile if you unintentionally included files more than once.

PRODUCT SUPPORT

Since SAS now has the complete rights to the AmigaDOS C Compiler, they are handling all technical support for the product as well. If SAS Institute treats this software package like its flagship product SAS, I feel secure in receiving prompt response to any problems I may have. Judging from SAS's reputation as a company, I expect even more development to follow on the heels of this effort, particularly if the Amiga public responds positively to this release.

Registered users may call (919) 677-8009 with technical questions regarding the latest compiler release.

CLOSING THOUGHTS

All in all, the 5.10 release of SAS/C for the Amiga is a very good upgrade to a reasonably good product. This release addresses some of the problems (or omissions) that existed in earlier releases, such as data alignment, parsing, C++ compatibility, and the new Workbench interface.

The Workbench interface is perhaps the biggest change that was made, and offers a new and exciting way of developing C programs on the Amiga. Pointing and clicking with a mouse has previously dominated the "special applications" market. Paint programs, CAD, multimedia, and other big GUI applications now have a new family member.

The Amiga is a fine computer, and software development from companies to enhance this perception is one of the things Commodore needs the most. Although there is no such thing as a perfect system, I would have no reservations recommending SAS/C version 5.10 to anyone. It is suited for small, fast code production requirements, many parts of the new operating system are written with it, and it still commands a large variety of library functions that other systems do not yet have. •AC•

SAS/C Compiler for AmigaDOS
SAS Institute, Inc.
SAS Campus Drive
Cary, NC 27513-2414
Price: $300.00
(919) 677-8000
Inquiry #200

Looking beyond the baud rate

The Baud Bandit & Baud Bandit MNP/Level 5 Plus Modems

by Ernest P. Viveiros, Jr.

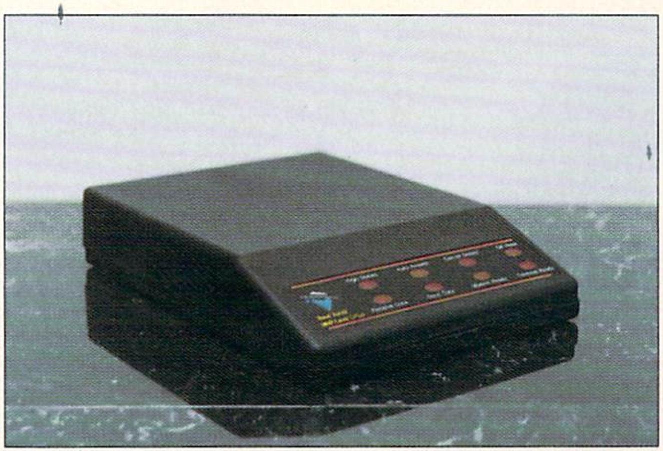
SO, YOU WANT TO BUY A GOOD modem, or how about a modem that simply works well without any problems or fuss? Well that's easy because, for most people, a modem is a plug-and-go peripheral. You buy the first affordable modem you find, plug it into the Amiga's serial port, launch your favorite telecommunications package and go online. No fuss. You then forget about the modem, and take it for granted. You never question its performance. (It must be a bad connection...)

This is an unfortunate practice. After all, we carefully evaluate most of our other peripheral purchases before we lay our credit cards on the table. Why shouldn't we take as much care when making a modem purchase? After all, the performance of this peripheral has a direct effect on our phone bill, which can get very costly—especially when calling long distance BBS's.

The reason for these misguided actions is the fallacy that all modems are created equal. Some people believe that different vendors are really selling the same OEM modem in different plastic shells. Still others believe that the different modems provide the same performance and features, thus the only specifications they are concerned with are baud rate, Hayes compatibility, and price.

The truth of the matter is that not all modems are created equal, and there are differences in price, security features, performance, protocol support, and more. Often overlooked features are warranties and documentation. What complicates the matter even more is the fact that there are a lot of modems out there to choose from—hundreds, actually. It's impossible to compare all of them, but a little research will go a long way. Check out magazine reviews, ask a friend, or inquire at a users group meeting. Once you start snooping, you'll be surprised at what you find. And you'll probably find the right modem at the right price.

To help you on your way to modem nirvana, we have done a little research on two good 2400 baud modems that work for us: the Baud Bandit and Baud Bandit MNP/Level 5 Plus, both produced by long-time Amiga peripheral vendor, Progressive Peripherals & Software.



The Baud Bandit MNP/Level 5 Plus modem—the original Baud Bandit with a boost!

The Baud Bandit

Are you looking for a plain vanilla modem? The original Baud Bandit 2400 baud modem is a good example of a modem without all the bells and whistles that works well for the money. The Baud Bandit is a basic 2400 baud, asynchronous modem. The modem features Hayes command set compatibility, as well as compatibility with Bell 103/212A, CCITT V.21, CCITT V.22, and CCITT V.22bis protocols. The modem is tone and pulse-compatible, as well as auto-answer, auto-dial-capable.

The modem also features a built-in memory for telephone number storage and user configuration settings. (No DIP switches here!) The Baud Bandit is also a looker with its sleek low-profile design.

Most important, the modem performs well. No hitches, no glitches. Using the excellent manual provided with the Baud Bandit, setup is easy. The modem package also includes an AC power adapter, quick reference guide, and telephone cable. You will have to provide your own serial cable (which is readily available, or you can build one). The Baud Bandit also comes with a full one-year warranty. For the casual on-line user, this is a solid modem, definitely worth the money.

The Baud Bandit MNP/ Level 5 Plus

Perhaps you are a telecommunications power user and need something extra in a modem. Take a look the the Baud Bandit MNP/Level 5 Plus Modem—the original Baud Bandit with a boost! The Baud Bandit MNP is an intelligent synchronous/asynchronous 2400 baud modem which incorporates the superior performance of the MNP (Microcom Net-

(continued on page 82)

Compression

Getting a Lot for a Little

by Greg Epley

Compression is used on most PC's to produce an "archive", which is a group of related files. Archives are usually associated with freely distributable or public domain files. An archive may be a text editor, a useful utility, a game, or a collection of pictures. The archived material is compressed into one single, easily managed file using an archival program.

There are many different archival programs to choose from. The two most important factors to consider when choosing which program to use are (1) amount of compression and (2) speed, of both compression and decompression. Opinions vary as to which of these two factors is most important. Obviously, some users are more concerned with the amount of compression, and others, with the amount of time it takes to perform the compression or decompression. Many people believe that compression and archives are helpful only for modem users, but this is not necessarily the case.

The use of compression to create "archives" is certainly common among modem users. It is easier to transfer one file to a computer system and extract or "decompress" its contents than to transfer several files, some of which may be in different directories. Transfers over a modem use the telephone lines, so the smaller an archive file is, the less time it takes to transfer the archive, and less money is spent. As we all know, long-distance charges add up quickly, and in-state charges even faster!

Archives can also be helpful to users without modems. Consider for a moment how you use the many files (programs, pictures, animations, etc.) that you may have collected. Most users don't use each and every program or file every day or even every few days. But look at the space these files occupy! Why have a hundred or so floppy disks filled with extracted files when you could store the same amount on 25 or 30 disks? Even if you have the space to store hundreds of floppies, consider how many more great Amiga goodies you could collect if you compressed what you have now.

Most archive programs let you specify which files you would like to extract. This handy feature eliminates having to wait for an entire archive to decompress if you only need part of it. It is also easier to look through a few disks for a particular archive than it is to search two or three times as many disks, with all their many directories and subdirectories. Still, some users prefer to have every file and program at their immediate disposal without having to wait for it. Obviously, these people have more money (to buy all of those disks), space (to store all of them), and time (to search through sometimes confusing jumbles of files for the one they want) than I do.

The purpose of this article is to present a series of benchmarks among the different archival programs available today. I will make a few comments, but it is up to the reader to decide which of the two factors mentioned earlier is most important to him or her, and thus, which archival program is best suited for a particular situation. I will begin with a bit of background on each of the archive programs, then some detail on each one, and finally move on to the benchmarks and how the tests referenced herein were performed.

ARCHIVE FORMATS

As this article is being written, there are seven different Amiga archive programs or formats. The formats and their filename extensions are:

Format	Filename Extension
ARC	.ARC
ZOO	.ZOO
PAK	.PAK
PKAZIP	.ZIP
LHARC	.LHZ
WARP	.WRP
LHWARP	.LHW

As a general rule, different formats are incompatible once archived. For example, you cannot extract a ZOO archive with the ARC archive program. Archive formats should be upwardly compatible. That is, you should be able to extract an older ZOO archive with a new version of the ZOO archive program. All of the formats listed here are upwardly compatible to the best of my knowledge, although

some have not been updated for quite some time. All formats should produce an archive which is smaller in size than the original contents as a whole; exceptions might be sound and pictures files. I have noted such occurrences in the benchmark tables.

All of these formats are available on other systems, or originated on other systems except for the last two. The first five formats are file-related formats; that is, individual files are stored. The last two formats, WARP and LHWARP, are disk-related formats. This means that tracks on the disk are stored in the archive, and whereas track 20 might be part of one file, track 21 might be part of another file.

Disk-archive formats are more common on the Amiga than any other system, so you are not likely to find compatible formats on other systems. Now, let's look at each of the formats in more detail.

ARC

The oldest archive format, Amiga ARC v0.23 (which is fully compatible with the original ARC v5.0 by System Enhancement Associates), has its roots in the PC environment as well as UNIX. When a file is passed to it, it uses one of four storage methods: (1) no compression, (2) repeated character compression, (3) Huffman squeezing, or (4) Dynamic Lempel-Ziv compression. ARC can reconstruct all files within the archive during decompression, or only those requested. ARC is typically very fast when compressing or decompressing and is fairly efficient when used on smaller files. In addition, it is one of the few formats in which it is generally impossible for the resulting archive to be larger in size than the original file or files. Since most Amiga files (sound and picture) are quite large, ARC is limited in its usefulness, however. Nevertheless, it is still in wide use todav.

ZOO

The next most commonly found format, Amiga ZOO v2.00 (which is fully compatible with Zoo v2.0), also has its roots in the PC and UNIX environments. It is an extemely useful format, and that usefulness is optimized by careful reading of the Amiga ZOO documentation. ZOO uses a form of Lempel-Ziv compression which provides space savings in the range of 20% to 80%. Unlike ARC, which cannot store path information (directories or multiple directory levels), ZOO allows you to store such information easily. Given the proper command, ZOO can then reconstruct all directories and all files within directories, or only those requested. ZOO tends to average somewhat slower compression and decompression times than ARC but this is due to the increased volume of compression possible. However, because ZOO attempts to compress all files, it is possible for the resulting archive to be larger than the original file or files. It performs very well when used with large files.

PAK

There is little information available on this format. The current Amiga PAK is v1.0. It appears to use a form of Huffman squeezing, so it is not as efficient as ZOO or ARC as a general rule. An interesting thing about PAK, however, is that you do not need to use a program to decompress PAK files. Instead, by simply "running" the file, its contents will be extracted in their original form. It does suffer from the same drawback as ARC, in that you cannot store path information with files. It is also impossible to request which files you want to decompress (it's all, or nothing). PAK also produces an occasional archive which is larger than the original file or files when compressing picture or sound files. Overall, PAK is the most inefficient of all the formats, and it is seen very rarely today.

PKAZIP

A newer format for the Amiga, but an oldie for the IBM and compatible systems, Amiga PKAZip v01.00 is fully compatible with PKWare's MS-DOS ZIP format. PKAZip is really much nicer than the MS-DOS equivalents, which are a set of separate utility programs. It is currently the only archive utility with a full Intuition interface. All of the other formats are CLI-based programs. This is my only gripe against PKAZip—I dislike the fact that the Intuition interface came first, with plans for a CLI interface in a future version. The ZIP format uses one of four methods to store a file passed to it: (1) imploding, (2) shrinking, (3) reducing, or (4) storing. PKAZip v01.00 does not implement the reducing algorithm yet. An early version of a ZIP utility called UNZIP does handle reducing, should you encounter anv ZIP files of this type. UNZIP will only extract a ZIP archive. I expect that we'll see better compression for both sound (primarily raw or 8SVX samples) and video (pictures and animations) when reducing is implemented. Many users will prefer ZIP to any other format simply because of its nice Intuition point-and-click interface. I don't mind it, but I prefer the option of a CLI interface.

LHARC

Another new format for the Amiga, LHARC v1.0, is fully compatible with LHARC v1.13 for MS-DOS. LHARC uses a combination of Lempel-Ziv and Adaptive Huffman Encoding logic to compress entries. Among the file-archive formats it seems to do the best job overall. LHARC's only drawback is its slow compression speed. Decompression speed seems to be about as good as any of the other formats. Since I am more concerned about getting the most compression possible, I prefer LHARC to any format I've used. The compression algorithms in LHARC have been greatly enhanced and modified for maximum compression efficiency, and LHARC can only get better.

NOTES ON TEST SUBJECTS

As mentioned in the main article, I tried to use files which were available in the public domain, preferably in the Fred Fish or AMICUS disk collections. In some cases, I obtained an incomplete file from another source elsewhere, and did not use the complete Fish or AMICUS version. This does not affect the test results, unless you want to perform a direct comparison and you have access to the original Fish or AMICUS file.

In the notes that follow, I have listed each test subject in alphabetical order, followed by its category in parentheses, and further information on the file. If a file is "available on request", I will provide the same copy I used in the tests if you send a list of those you want, a blank disk, and a self-addressed, stamped mailer or SASE to the address given at the end of the main article. Please note: I cannot provide a copy of the commercial disk used for the small disk-archive test.

CHOPPER (Sounds) – originally a raw sound sample file resaved in 8SVX (IFF 8-bit sampled voice) format, so that all sound files would be in the same format. The choice of raw or 8SVX format for archives seems to be negligible, but you may want to experiment with this. Available on request.

DAN (Pictures) – lo-res of Dan Silva; available on a public domain slideshow disk, or on request.

DISTRIBUTION (Texts) – "Distribution" file from Fred Fish #222.

EXPLOSION497 (Sounds) – in 8SVX format; available under a number of different names in the public domain and as a demo sound on Perfect Sound 2.2 and previous release disks.

GOODMORN (Sounds) - in 8SVX format; a sample of Robin Williams, available on request.

GRAVSIM (Hacks) - complete, from Fred Fish #223.

GRAVWAR (Games) - v1.03, all docs and executable; same as that on Fred Fish #70, but obtained elsewhere.

ICONS (Others) - a collection of assorted icon (.info) files, available on request. There are a number of icon collections available in the public domain, so I am not sure which one this is.

IFF2SUN (Applications) - complete, from Fred Fish #223.

JACKPLAY (Animations) - Jack Tramiel ANIM, available on request.

LARN (WARP/LHWARP) - v12.0B of Amiga LARN from The Software Distillery; 49% full, used as medium test subject for disk-archive formats.

MARKETROID (Hacks) - same as that on Fred Fish #115, less source code; obtained elsewhere.

MUSXMAS (Others) - six DMCS music scores by Scott Fillar, less instruments, since standard DMCS instruments are used; available on request.

PETERSQUEST (Games) - complete, from Fred Fish #224.

POPLIFE (Games) - same as that on Fred Fish #111 less source code; obtained elsewhere.

ROGER2 (Pictures) - HAM picture of Roger Rabbit available on request, or on a public domain slideshow disk.

SANTA (Pictures) - HAM picture of Santa Claus, available on request; should also be on Fred Fish #17.

SMALLCLOCK (Applications) - same as that on AMICUS #8; obtained elsewhere.

SPIGOT (Animations) - same as that on Fred Fish #272; obtained elsewhere.

STAR10 (Hacks) - same as that on AMICUS #12 less source code; obtained elsewhere.

STARFLEET (Animations) - animation by Jim Robinson, available on request.

STARTREK1 (WARP/LHWARP) - disk 1 of Jimbo Barber's PD "Star Trek" game; 98% full, used as large test subject for disk-archive formats.

CALIFORNIA (WARP/LHWARP) - California Scenery Disk for Test Drive II; 30% full, used as small test subject for disk-archive formats.

TREKTXT (Texts) - two of Mike Smithwick's "Star Trek" parodies on Amiga, available from a number of sources, or on request.

VLT (Applications) - complete, from Fred Fish #226.

WILDDOC (Texts) - documentation to shareware version of WILDCAT! BBS program for IBM and compatibles, available on request.

WARP

The first disk-related archival format, it has no known counterpart on any other system, making it an exclusive Amiga format. The current Amiga WARP is v1.11. I could not locate any information on the compression algorithm used for WARP, although I suspect it is one of the forms already mentioned. There are several "bogus" forms of WARP still available, but the version discussed here is the official WARP. It includes two additional utilities: UNWARP, for decompressing WARP archives faster than the "write" (extract) mode of WARP, and WSPLIT, which allows you to split WARP archives into two or more smaller archives based on disk track numbers.

The only problem with disk-archive formats is that most computer viruses hide in tracks 0 and 1, and these tracks are usually, but not always, included in such archives. This means that every extracted copy of the archive will produce an infected disk if the original disk was infected. There are solutions to this problem: (1) make sure that the original disk is not infected before creating the archive, and/or (2) if the disk is a normal Amiga boot disk (i.e., it boots into AmigaDOS and the startup-sequence), compress tracks 2 through 79 only; the end user can "Install" the disk from the CLI, which stores the necessary information on tracks 0 and 1. Most public domain material meets the former criteria, and the CLI

Table 1 - GAMES	ARC	ZOO	PAK	PKAZIP	LHARC
POPLIFE					
(13640)	8954	9144	12288	7540	7264
Compression time	11.33	3.58	3.04	9.55	23.03
Decompression time	6.40	1.79	3.26	2.81	8.70
GRAVWAR					
(85618)	60657	52536	73728	40490	39637
Compression time	1:13.16	21.43	15.76	1:16.79	2:13.76
Decompression time	37.83	9.97	17.39	13.58	43.21
(85840)	(39.10)		(18.60)		
PETERSQUEST					
(527159)	315376	310823	411648	243850	234243
Compression time	6:58.99	2:08.67	1:37.85	6:46.54	14:08.14
Decompression time	3:39.18	1:00.92	1:47.86	1:24.65	4:23.54
(529079)	(3:45.94)		(1:54.62)		

Table 2 - HACKS	ARC	ZOO	PAK	PKAZIP	LHARC
STAR10					
(1552)	1050	1151	2048	1010	925
Compression time	1.94	.58	.70	4.72	3.44
Decompression time	1.05	.42	.69	1.20	1.62
MARKETROID					
(40408)	26475	24352	32768	18592	18241
Compression time	34.63	10.60	8.58	1:06.83	1:21.72
Decompression time	18.20	4.81	8.82	7.88	20.93
(40497)	(18.98)		(9.59)		
GRAVSIM					
(91922)	46371	43964	67584	34125	33561
Compression time	1:05.81	22.51	21.95	1:20.85	3:54.75
Decompression time	37.88	13.54	19.14	17.53	43.14
(93129)	(39.21)		(20.46)		

Table 3 APPLICATIONS	ARC	ZOO	PAK	PKAZIP	LHARC
SMALLCLOCK					
(4564)	2545	2650	4096	2267	2206
Compression time	3.89	1.29	1.06	15.10	9.64
Decompression time	2.10	.59	1.26	1.05	3.05
IFF2SUN					
(44670)	22570	22395	33792	16745	16398
Compression time	34.21	12.07	12.65	25.49	1:34.05
Decompression time	19.81	7.52	9.63	9.87	21.44
(45936)	(21.34)		(11.16)		
VLT (see notes)					
(700898)	432981	410670	547840	341078	340773
Compression time	9:46.30	3:10.92	2:23.75	9:14.61	20:56.07
Decompression time	4:48.23	1:21.19	2:06.91	1:47.93	4:52.82
(704820)	(5:16.34)		(2:42.34)		

NOTES:
(1) Due to its large size, the archives for VLT were sent to RAM: instead of VD0. The source material was kept in VD0: during the test. (2) VLT contains a small ZOO archive in one of the directories. All of the formats listed here will simply store any archive files in the same archive format with no further compression. Some will compress archive files in other archive formats and some will not; this usually depends on the contents of the archive file.

operations are not as difficult as they may sound.

Commercial software should certainly not be distributed this way. However, if you have a program that you don't use a lot and want to store it this way there are precautions to take. DON'T compress the original master disk, only your copy. DO make sure that your copy is not infected with a virus using a virus detection program (I recommmend both VirusX 4.0 and ZeroVirus). If you insert the disk and Workbench reports it is "BAD", this indicates that the disk will not boot into AmigaDOS. This could be because the disk actually is faulty, or because tracks 0 and 1 contain special boot information. In the latter case, you will have to compress all tracks on the disk.

Remember: do not compress your original master disk(!), and do not distribute any commercial software in this manner.

LHWARP

A second disk-related archival format, it also has no known counterpart on any other system, making it another exclusive Amiga format. The current Amiga LHWARP is v1.03. It uses an Adaptive Huffman Encoding compression which is said to produce smaller files than WARP. Despite following the documentation very carefully, I have yet to produce an archive in the 20-25 minutes stated as an "average".

In addition, I have noticed that LHWARP usually works best on disks which are mostly full. The benchmarks do not reveal this, but LHWARP seems to have trouble compressing the "empty" tracks on some disks. Compression also seems to take longer on disks with less material than on disks with more material. Since WARP always takes less time, I recommend using it on the disk first. Then, if the archive is 400K or more in size, try LHWARP. If the first few tracks take more than about 30 seconds each to compress, you are probably wasting your time. The space you save on such disks will be minimal compared to the amount of time it will take to compress the disk, or for the end user to decompress the archive. However, if time is not critical, you will usually end up with smaller disk archives using LHWARP. LHWARP is a viable alternative to WARP. Perhaps with a bit more work it can become as efficient as LHARC, which it is so closely based on.

LHWARP also suffers from the virus problem that WARP does. However, LHWARP has a nice feature which displays the boot tracks before compression and before decompression. This gives you a chance to look at the boot areas to see if there is any suspicious wording that might indicate a virus. I still recommend using one of the good virus detection programs as a precaution, in case you cannot spot the virus.

TEST RULES

Each format claims to be "the best" or "better than ZOO" or "faster than ARC" or whatever. So, I decided to plunge into the several thousands of files which I have accumulated since 1985 to give these programs a real challenge. Undoubtedly, some of you won't agree with my findings, and you will want to run your own tests, for whatever reason.

Below are descriptions of the ground rules I devised to perform the tests, the equipment I ran the tests with, and any exceptions or special notes which need to be taken into consideration, and the reasons behind these criteria:

1) Independent tests must be run. This is due to the differences in the formats themselves, and the way they handle information.

The disk-archive formats were tested with three disks which most nearly approximated the three levels of disk capacity. Ideally, these three capacities should be 10% (or less), 50%, and 99%.

2) Compression and decompression time were tracked for both file- and disk-archive formats. Timings were obtained with a stopwatch, and were measured from the point at which compression or decompression started, to the point at which the CLI prompt or other terminating message appeared. Loading times for the archive programs themselves are thus not included. All compression and de-

Table 4 - SOUNDS	ARC	ZOO	PAK	PKAZIP	LHARC
EXPLOSION497					
(19464)	14706	14568	15360	13511	13058
Compression time	22.30	5.34	3.03	34.30	28.36
Decompression time	10.42	2.03	4.30	3.72	13.38
GOODMORN					
(81748)	57131	53492	71680	52146	49838
Compression time	1:03.87	17.51	11.69	49.09	1:38.25
Decompression time	36.60	7.65	17.66	13.21	43.04
CHOPPER					
(150152)	60136	57477	80896	68840	61799
Compression time	1:27.30	23.75	15.59	3:20.45	3:42.88
Decompression time	55.59	11.09	26.29	18.57	50.82

Table 5 - TEXTS	ARC	ZOO	PAK	PKAZIP	LHARC
DISTRIBUTION					
(1038)	702	854	1024	747	605
Compression time	1.29	.41	.67	1.38	2.61
Decompression time	.67	.32	.68	1.10	.96
TREKTXT					
(27837)	15308	15664	20480	13929	14219
Compression time	19.79	6.60	4.58	16.20	45.71
Decompression time	11.81	2.94	5.85	5.24	13.55
WILDDOC					
(522368)	192632	189314	362496	146877	162365
Compression time	4:40.78	1:23.38	1:01.44	5:22.60	21:08.95
Decompression time	2:58.67	36.46	1:39.42	53.23	2:44.64

Table 6 - PICTURES	ARC	ZOO	PAK	PKAZIP	LHARC
DAN					
(4980)	3249	3383	4096	2817	2534
Compression time	4.82	1.32	1.12	4.15	14.05
Decompression time	2.39	.69	1.37	1.37	3.70
SANTA					
(46924)	45079	59038	47104	47032	44225
Compression time	1:04.39	22.55	7.48	25.35	1:02.57
Decompression time	28.99	2.05	10.83	2.71	46.40
ROGER2 (see notes)					
(116962)	114447	154623	117760	117080	113395
Compression time	2:47.29	56.96	18.92	59.04	2:34.16
Decompression time	1:12.89	4.79	27.13	5.59	1:58.67

NOTES: Some picture and sound files do not compress well at all under some formats and the archive ends up larger than the original contents. As ROGER2 shows, this will usually, but not always, occur with ZOO, PAK, or PKAZIP. ROGER2 is a good example of the worst case picture file you are likely to encounter.

Table 7-ANIMATIONS	ARC	ZOO	PAK	PKAZIP	LHARC
JACKPLAY					
(113240)	84566	94366	92160	79060	75767
Compression time	2:21.21	37.16	19.13	2:41.36	3:48.09
Decompression time	57.97	11.73	23.84	18.62	1:21.68
(113271)	(58.46)		(24.31)		
SPIGOT					
(253791)	223882	277239	235520	226839	213679
Compression time	6:04.89	1:49.45	40.78	2:58.96	5:43.17
Decompression time	2:28.76	11.14	55.33	46.65	3:39.04
STARFLEET					
(see notes)					
(597594)	-----------	265272	360448	193099	194524
Compression time	-----------	1:58.41	1:04.47	14:12.12	19:21.96
Decompression time	-----------	45.25	1:46.89	57.54	3:21.86

Table 8 - OTHERS	ARC	ZOO	PAK	PKAZIP	LHARC
ICONS					
(9013)	5433	6131	7168	6193	4874
Compression time	14.48	7.59	11.91	25.64	37.44
Decompression time	6.42	7.11	2.83	8.35	12.07
(9455)	(8.66)		(5.04)		
MUSXMAS					
(44942)	21916	22001	34816	15969	15401
Compression time	34.18	10.84	10.80	33.11	1:18.44
Decompression time	19.37	6.65	9.59	7.67	22.12
(45131)	(20.56)		(10.77)		

Table 9 DISK-ARCHIVE TESTS	WARP	UNWARP	LHWARP
CALIFORNIA			
(226989)	195121		163156
Compression time	8:16.43		28:42.02
Decompression time		1:08.31	4:02.27
LARN			
(386650)	242964		203666
Compression time	8:50.49		34:48.82
Decompression time		1:10.24	4:38.75
STARTREK1			
(738981)	447328		335248
Compression time	11:25.89		46:34.17
Decompression time		1:24.04	7:00.97

NOTES: ARC would not process the single, large STARFLEET file. Several attempts were made to compress it, including compressing the on-disk file to RAM: and VD0:, increasing stack size, and reassigning the ARCTEMP area used during compression. ARC obviously decided it could not compress the file or is otherwise not capable of handling a single file of this size. NOTE: ARC was able to handle the single WILDDOC file in TABLE 5 above at 522368 bytes.

compression were performed in a 1 meg VD0: where possible, except in the cases of the disk-archive formats, which required some disk activity.

3) For testing file-archive formats, these guidelines apply:

The possible selections of files were broken into eight categories. These were (1) games, (2) animations, (3) pictures, (4) texts, (5) sounds, (6) applications, (7) hacks, and (8) others. Others, in this case, were one set of DMCS music scores and one set of icons. A test subject is considered the full contents of all directories and all subdirectories which would normally be included in distribution. For example, if no "player" program is normally supplied with an animation subject, it was not included in mine. Certain restrictions must be taken into account for some formats: (1) long filenames must be shortened, and (2) script files must be included to rename the files and/or create any necessary directories and subdirectories, as well as to actually move the files into these directories. In this way, each archive program is used as it would normally be used, and the exact same structure is maintained for the final material.

An "average" small, medium, and large test subject must be selected from each category. These were arrived at for the purposes of this article by accumulating a sufficient number of test subjects in each category, sorting them in order of smallest to largest in size (in bytes), selecting the first subject in the list as smallest, the last as largest, and the one most near the middle of the list as medium. The number of test subjects in each category were: games—28, animations—3, pictures—56, texts—4, sounds—14, applications—113, hacks—34, and others—2.

Obviously, some categories had more subjects than others. This is partly due to time limitations, and partly due to the particular kinds of files which I had on hand. All files were public domain, and most are available on either Fred Fish or AMICUS. PKAZIP did not offer any means of having any directories automatically created during extraction. For this reason, it was necessary to stop and restart the clock to respond to the directory creation

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(Compression, continued)

requester to obtain a close measure of the decompression time.

4) For testing disk-archive formats, these guidelines apply:

The test subject must be material which would normally be presented in this format or is suitable for this format, where the contents of the disk—including boot information—need to be maintained in their original structure.

All disks were public domain, except for one. I did not have any public domain disk or material which adhered to the rules previously stated to use as a small-capacity test subject. Therefore, I selected the smallest I had on hand, which was part of a commercial product, rated at 30% capacity. To be fair, most material stored in this format will occupy at least half of the disk capacity, and such a test is certainly questionnable.

WARP decompression was measured with the companion UNWARP utility rather than the "write" mode of WARP, since this is the way that I typically use WARP. UNWARP is designed to consistently outperform the "write" mode of WARP.

All compression and decompression were performed on drive 0, so that any possible drive speed differences were avoided.

5) Tests were performed on a stock Amiga 2000 (B2000) with 1.2 KickStart installed, 1 meg of standard memory (512K chip), A2052 2-meg board, and two floppy drives. The 1 meg virtual disk (VD0:) was set up in FAST RAM, and ARP 1.3 was installed. There were no other boards or tasks placing a load on the system except for GOMF 2.2, which is usually running on my system.

THE BENCHMARKS

The tables which follow present the results of the benchmarks. A separate table is used for each category for the file archive formats. The last table is used for the disk archive formats.

In the file-archive tests (Tables 1-8), the total size in bytes of the test subject is given in parentheses, ( ), under the subject name. Compression and decompression times are in minutes, seconds, and hundredths of seconds (MM:SS.hh) and are not zero-filled. Script files (as mentioned in the rules above) had to be created for some ARC and PAK tests. The sizes listed in square brackets, [ ], are the total size in bytes of each test subject with all files moved into the root directory, plus the script file. Also, additional time is required to execute the script file to obtain the exact same extracted copy for all formats. This time was obtained by stopping the clock at the end of the decompression, starting the clock as the script executed, and stopping the clock at the end of script execution. These times are listed in square brackets as well.

The disk-archive test results (see Table 9) are presented a bit differently, since I measured WARP decompression using the related UNWARP utility. There is no decompression time for WARP; this is listed in the UNWARP column. There is no compression time for UNWARP since it only handles decompression, and no compressed size for UNWARP since it is the same as that for WARP.

CONCLUSION

Regardless of which format is "the best", chances are you will encounter one you don't particularly like from time to time. The benchmarks presented here are meant as guidelines only, not as the groundwork for a doctoral thesis on "Compression Efficiency". Perhaps my methods aren't the best, but you can run your own tests if you don't like mine. I will respond to any positive or negative comments you care to offer in this regard. Obviously, if you had nothing else to do you could collect 100 or more test subjects, perform the tests, and present the results in a series of graphs or "performance curves" which would visually depict the best format to use, and when to use it. It would take several weeks just to collect and organize that many test subjects, and even longer to actually run the tests and tabulate the data. Just something to think about ...

If you have difficulty finding any of these archive programs, please don't hesitate to give our BBS a call. We try to keep the most current versions of all the commonly used formats on-line. If you don't see what you need, just leave me a message and I'll see what I can do. If you have any other questions or problems with any of these programs I would also be happy to help.

•AC•

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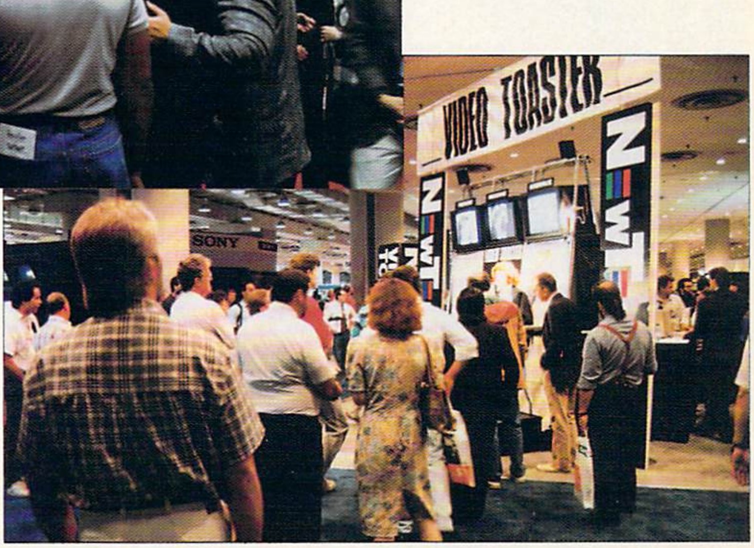
The Amiga's Rising Video Stars Shine at

Video Expo New York

Video Expo New York, a week-long event for video and multimedia professionals, was held at the Jacob K. Javits Convention Center September 10-14. The Amiga was on display in several prominent locations, ranging from Panasonic's large booth filled with cameras, monitors, and the other assorted tools of their video wizardry, to the booth of the company that employs many of the Amiga's reigning video wizards, NewTek.

Commodore Business Machines brought an array of Amigas, Amiga developers and CBM corporate personnel to "wow" the thousands of attendees. Each Amiga developer was allowed a small section within CBM's booth to display their company's latest successes with the Amiga. Since the spotlight of this show was obviously on video, CBM was able to attract some important video-oriented Amiga companies, such as Active Circuits, Eschalon Development, FutureVideo, Gold Disk, and RGB.



Commodore (left) and NewTek (below) attracted many visitors to their respective demonstrations at Video Expo New York. And yes, everyone went home impressed!

ACTIVE CIRCUITS

Eric Lavitsky, vice president and director of research and development of Active Circuits, demonstrated the variety of video and specialty products developed by his firm. ImageLink™, an image conversion and imaging system, converts images between at least 12 individual formats, with an option for more. ARexx support, image scaling (including automatic correction for different aspect ratios), reduction with selectable dithering, and only a 1-megabyte memory requirement make this $199.95 package interesting.

CineLink™ is Active Circuits' expansion module for ImageLink to output directly to high resolution (4000 line, 24-bit) film using digital film recorders from lasergraphics™ and Presentation Technologies. Intuition user interface and ARexx support provides easy internal or external control. Complete documentation for the device driver and developer guidelines are provided for additional third-party support. CineLink does require a digital film recorder, ImageLink, and a SCSI controller (such as Commodore's A2091/A3000 SCSI controller).

Another ImageLink expansion module, TGALink™, is available to control TARGA and ATVista™ framebuffers, using the Amiga XT or AT Bridgeboard. TGALink is compatible with the TARGA 16, 24, and 32. According to Mr. Lavitsky, Active Circuits is the only Amiga developer who is working with TrueVision and their TARGA boards for the IBM Bridgeboard side of the Amiga.

Active Circuits has also developed an Amiga interface for Sony's 650-meg optical disk. The Magnum/650 is a self-contained, 5-1/2-inch unit that supports HDToolBox and the Amiga FastFileSystem and RGB standard. The Magnum/650 works with the A2091/A3000 or other compatible SCSI disk controller. *Contact: Active Circuits, Inc., 1985 Highway 34, Suite A-4, Wall, NJ 07719, (908) 974-1616. Inquiry #229.*

ESCHALON DEVELOPMENT

Robert Salesas of Eschalon worked tirelessly to provide Video Expo attendees a view of Video Tools, a new utility package. Video Tools features a Subtitler that works with text files from your favorite editor or word processor in creating movie or video subtitles, a Teleprompter that comes with all the features of a sophisticated prompting package, a Crediter utility that assures smooth text scrolling no matter what the speed, and an Image Presenter that is totally controllable by ARexx.

Video Tools' Newsbriefs and Weatherstation tools let you easily create news or weather cable channel programming, while a Scroller lets you run text across a screen horizontally.

With some 20 programs, 10 fonts, four color fonts, and "a bunch of brushes", Video Tools is a complete package to which Eschalon decided to add "quite a bit of software" along the way, Salesas noted. Retail price is $299.95.

According to what he has seen recently, particularly at Video Expo, Salesas believes that "a lot of people are deciding that now is the time to go with Commodore ... people believe that [the Amiga] can go somewhere, and that's very important." *Contact: Eschalon Development, 2354 Cote Street Catherine, Montreal, Quebec, Canada H3T 1A9, (513) 340-9244. Inquiry #230.*

RGB

RGB showcased its AmiLink 2.0 video editing system, which offers extreme flexibility and expandability in the development of a completely integrated, interactively controlled video environment. Twelve source VTRs are online in AmiLink's edit mode, and multiple record decks are also provided for. Control of up to 32 devices is possible via a Video Local Area Network from the AmiLink control panel. Any of a dozen videotape formats can be controlled and mixed with this RGB product, which has been used by NASA and several other prestigious client companies. *Contact: RGB Sales & Marketing, Inc., 3944 Florida Blvd. Suite #4, Palm Beach Gardens, FL 33410, (407) 622-0138, FAX (407) 626-5138. Inquiry #231.*

Eric Lavitsky of Active Circuits (above) and Robert Salesas of Eschalon Development (right) answered questions in the Commodore booth while introducing their newest products.

FUTUREVIDEO PRODUCTS

FutureVideo made a strong pitch to Amiga users in attendance for its EditLink™ PC-based plug-in desktop video edit control system, which was demonstrated running on a Bridgeboard on an Amiga 2500.

The EditLink provides a multi-featured desktop editing system that is very affordable. Compatible with S-VHS, Hi-8 and ED BETA high-band tape formats, EditLink smoothly and quickly performs assemble and insert edits, as well as combined audio/video, video-only and audio-only edits.

An optional dual-input SMPTE time code reader lets EditLink perform practically flawless, seamless edits to plus or minus 1 frame with suitable Panasonic and Sony VTRs, VCRs and Camcorders. Incredibly, you can edit only the video portion of a presentation in which the audio and video are greatly intertwined, then use EditLink's audio dub feature to make the audio fully continuous again. Edit List Manager software bundled with the card lets you create and manipulate EDLs of up to 999 events in length.

"What we are really doing is bringing very high-end performance to very low-cost equipment," FutureVideo's Gary Metzger emphasized.

Another advantage of using EditLink with a Bridgeboard is that full multitasking is possible, allowing you to do all character generation and graphics on the Amiga side, which is not used by EditLink.

You don't have to have an A2500 series or A3000 use EditLink, either—an Amiga 500 can be your edit controller. EditLink is completely compatible with the Video Toaster, and adds editing capabilities the Toaster lacks. *Contact: FutureVideo Products, Inc., 28 Argonaut, Laguna Hills, CA 92656, (714) 770-4416. Inquiry #232.*

NEWTEK

With a booth as large as Commodore's and an admiring, enduring crowd to match, there can be little doubt that New Tek is still stirring up as much interest as any company selling any video product out there.

Once again, the Video Toaster dominated discussions even among Amiga developer representatives other than those from NewTek itself, and attendees left in high anticipation of the soon-to-be-released $1595 gem. *Contact: NewTek Incorporated, 115 W. Crane, Topeka KS 66603, (800) 843-8934, FAX: (913) 354-1584. Inquiry #233.*

ZUMA GROUP

Deep within the Panasonic booth, Copper Bittner of Zuma Group demonstrated TV*Text Professional and Zuma Fonts, as well as the special effects slide show program TV*Show Version 2, which she ran on an Amiga 2500/30 at the Expo.

Ms. Bittner said it was the latter of the three Zuma products which occupied most of her preparation time in the days leading up to the show.

After being invited to join the Panasonic presentation and receiving some printed literature as to what that company planned to highlight, Bittner said she "took about an hour and a half [to] put together five or six pages of information touting their programs" which she put into a loop in TV*ShowVersion 2. That information was then showed keyed over video coming off Panasonic's 7500 S-VHS machine at the Expo, which she described as "absolutely phenomenal" for all video interests attending. *Contact: Zuma Group Inc., 6733 Black Canyon, Phoenix, AZ 85015, (602) 246-6708, FAX (602) 246-6708. Inquiry #234.*

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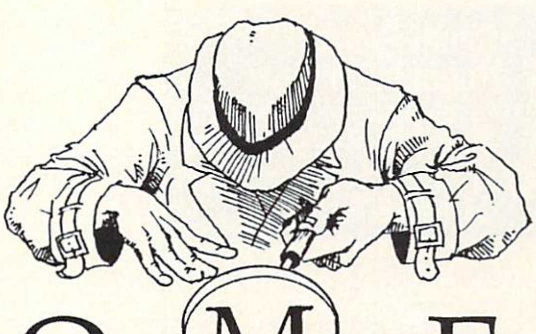

ROOMERS

by The Bandito

[The statements and projections presented in "Roomers" are rumors in the purest sense. The bits of information are gathered by a third-party source from whispers inside the industry. At press time, they remain unconfirmed and are printed for entertainment value only. Accordingly, the staff and associates of **Amazing Computing**™ *cannot be held responsible for the reports made in this column.]*

The Bandito recently had a chance to review Commodore's financial report for the second quarter of 1990. It seems that Commodore declared a loss for the quarter ending June 30, even though sales of Amigas were up 40%. What caused this poor performance? According to Commodore, C64 and PC clone sales were down (which reduced revenues). That, coupled with higher marketing expenses for the Amiga, forced them to declare the loss. Of course, The Bandito never stops at just reading the raw figures.

The really interesting information can be found between the lines in those earnings reports. When you look there, you find that Commodore is continuing to spend heavily on Amiga marketing. Whether they want to or not, Commodore seems to be concentrating their efforts on the Amiga. After all, if their C64 and PC Clone lines aren't selling that well, it makes sense to concentrate on the one product line that *is* doing better. That's good news for loyal Amigans. Now we can look for more hardware introductions in the next year. Software developers should be doing more for the Amiga, too.

So how has Commodore's stock been doing? Poorly, to be charitable. Commodore stock dipped under 5 while the stock market was undergoing its latest convulsions. Of course, all the other hi-tech stocks have taken a beating, too. The Bandito's prediction: Commodore will continue to limp through this year, but 1991 should look very good. The changes being made in the organization will really start to take effect next year. The new CDTV hardware should be hitting its stride in 1991, and European sales will be stronger than ever, assuming they get their act together.

Even those of you with short memories should remember The Bandito telling you about an embarrassing typo in one of Commodore's new newspaper ads for the Amiga. Well, The Bandito has to give credit where it's due, and somebody at Commodore noticed the typo in the ad, too: you know, "compatability". Commodore corrected it before The Bandito's message had even hit the streets.

Let's see here, The Bandito has just managed to find some figures about the entertainment software business, always an amusing source of news. How's this: Last year $288 million dollars worth of computer games were sold in the U.S., representing about 12% of all software sales. Not bad, considering how cheap games are compared to real software (you know, the boring stuff that you *have* to use). Also consider that some surveys have shown that almost a third of all user time on computers is spent on games, which rank second only to word processing as the most popular use for these modern marvels.

Of all games sold in the U.S. last year, about 33% were role-playing games, 30% were simulation or strategy games, 22% were arcade or action games, with the remaining games, like puzzles, filling all those other categories. So, it appears that the obvious thing to do is create a roleplaying game that's also a simulator.

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The Bandito has mentioned before that Commodore has been working hard to sell Amigas into the education market. Seems like Commodore's efforts are bearing fruit—or rather, causing some rotten fruit to fall off the tree. Apples, to be precise.

How so? Well, computer science majors at the Virginia Polytechnic Institute and State University have been required to buy a Macintosh with A/UX (Apple's version of UNIX) since 1987. This year, things have changed. After reviewing all major UNIX workstations, the school decided on the Amiga 3000 running AMIX (Amiga UNIX).

The A3000 beat out workstations from AT&T, Data General, DEC, Epson, Hewlett-Packard, NeXT, IBM, NCR, SUN, Zenith, and Honeywell. In fact, the Amiga kicked some serious chassis. The chairman of the selection committee said the Amiga was, "head and shoulders above the other machines" and "just far outperformed the others." Of course, there would have been no contest at all if they'd just looked at what games are available for other UNIX workstations.

Of course, these are the loaded 25 MHz versions with the 100-meg hard drive and 5 megabytes of RAM. The user interface will be a basic UNIX shell running X-Windows. The press release that The Bandito saw said that the UNIX release would include the fabled Lowell graphics board to provide 24-bit graphics, though The Bandito wouldn't advise that anybody hold their breath while waiting. By the way, is Commodore really serious about the Lowell board, or do they have something else up their sleeve? The Bandito hasn't heard of any beta testers for the Lowell board outside of Commodore yet, so it must not be very close to shipping. You'd think that Commodore would want some of its developers to get new versions of, say, paint or 3-D programs ready.

> *The Bandito hears that NewTek is working on a new top-secret project, with an amazing prototype already in action.*

Another amusing tidbit that The Bandito has garnered: a hot tip that Commodore and Sun are going to announce an agreeement whereby Commodore would "take over" the low end of Sun's workstation line—replacing the 68xxx models in Sun's line with Amigas running Unix. In other words, the low-end Sun workstation would really be an Amiga 3000. The Bandito doesn't think it's likely, but stranger things have happened in this business.

In other Commodore factoids, The Bandito has learned that an enhanced Paula chip is indeed in the works. Support for several different audio modes, including a 44kHz sampling rate (CD quality), or an 8-voice mode, are said to be included. This should blow away any other attempt at built-in PC sound. Of course, The Bandito hears that Commodore is considering using Motorola's hot new DSP chip, the 96002, which would also provide other nifty coprocessing features. Amigas with built-in sound digitizing? Yep, could be.

The Bandito hears conflicting reports about the name and configuration of some of the new Amigas. Apparently, marketing is floating some trial balloons. A tower model with a 68040 is one of the prototypes; this may be the A4000. On the other hand, some Commodore insiders are arguing that this should be called an A3500; save the A4000 designation for a model with new graphics boards.

The Bandito, as a public service, has decided to provide some tips for a couple of the popular games out there. This means you'll be able to solve the games faster, and thus have more time to read The Bandito's deathless prose style. So here's a hot one on how to handle Psygnosis' latest killer game, Shadow of the Beast: go to the right at the start of the game; when you reach the first dude with the spear press A, then type Ten Pints. Cheat Mode Activated flashes on the screen to let you know it's working; your character is now unkillable. This helps out some, but you still have to solve the riddles to complete the game. If you try the wrong thing in some places, you'll have to reboot because you won't die to try again.

And here's a hot tip for Drakkhen, the role-playing game from Data East: create a new set of characters using the procedure described in the manual, but with the following changes. When you are asked for the first name, type SUPERVISOR and press Return. Now enter a normal name and continue the creation process. When you use this team of characters, the game works as usual except that when you press F10, all wounds are healed and dead characters are resurrected. This helps a lot, as you might imagine. Happy slaying.

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While we're talking about games, let's look at what's hottest in the stores right now. Strike Aces from Accolade is a fighter/bomber simulator where you can try out many different planes. Star Control, also from Accolade, has some hot graphics and interesting play. Damocles is another one with killer graphics. And the Dragonstrike dragon flight simulator from SSI wins points for being unusual. Too bad you can't fly a dragon against an F15.

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The Bandito hears from some disappointed customers that Digi-View doesn't work with the A3000. Of course, a new version is in the works, and it should be out by Christmas. Seems that Commodore went and changed the parallel port again, apparently just for the heck of it.

The new ProWrite version 3.1 is gathering good reviews; it's added some powerful features while maintaining its graphic interface. Micro-Systems Software also recently updated their excellence to 2.0. Looks like it's time for Pen Pal to get a new version. Word Perfect is still far away from a new version. The Bandito has heard that Gold Disk is working on a graphic word processor, trying to get the speed of Transcript in a visually appealing shell.

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Siggraph report: The Amiga, in the guise of the Video Toaster from NewTek, outdrew Apple, Pixar and AT&T's Truevision. Seems that these computer graphics professionals just oohed and aahed over Allen Hasting's Lightwave software, and the price of the Video Toaster really slew them. For about the same price as a Video Toaster, you can maybe get a genlock board for your Macintosh. For the price of a Pixar, you can get a lot of Video Toasters—and the Pixar doesn't do video effects.

The Bandito saw well-known MacFanatic (famous musician, too) Todd Rundgren turn on to the Video Toaster—a Mac-ophile turns Amigoid, as it were. His jaw was open as he watched the Video Toaster run through its tricks. Perhaps he was thinking of the cool music videos he would be able to produce with the Toaster.

The Bandito hears that NewTek is working on a new top-secret project, with an amazing prototype already in action.

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No telling what segment of the market they're going to destroy this time, but The Bandito suspects that it involves video. What's left to conquer in the video market, after the Video Toaster does it all? Well, there are still a few things left. Apparently, Tim Jenison has a new wrinkle on an old problem. The Bandito will start haunting trade shows next year, hoping for a glimpse.

IBM's new home computer, the PS/1, has apparently done well in its three-city test and is rolling out nationwide. How does this affect the Amiga? It probably helps, by bringing the concept of a home computer to a wider audience. What Commodore needs to do is build MS-DOS disk compatibility into the operating system, so that data can be exchanged more easily.

The fabled Atari ST emulation has arrived. Yes, if for some peculiar reason you want to run Atari ST software using an Amiga, it's now possible. Now, now, don't laugh. Think of the poor Atari owner who is forced to give up all his wonderful software if he buys an Amiga. With an Atari ST emulator, he can continue to use all those wonderful old ST programs, thus saving his investment in software.

The Atari emulation card, named "Medusa", is from a German firm (Combitec). It's a card that slots into the A2000 series, giving you almost a full-speed ST. It works better with a 68020 or 68030 card installed, of course. The card is quite compact; there are two big 100-pin PALs, and that's about it. You do need to get a copy of the Atari operating system, TOS (Tramiel Operating System), on disk though. But it should be floating around on the bulletin boards, or at a dealer.

Medusa requires an Amiga with at least 1 megabyte of RAM, but Combitec recommends 3 megs for better compatibility. The emulator uses the entire Amiga memory without problems. All ports are enabled, and the disk drives are read- and write-compatible with original Atari 720 KB drives. Some hard drive controllers (notably, Commodore's) can be used. Standard printers and plotters work, too.

The software can be loaded directly from disk or hard drive, and is not copy-protected. The Amiga part of the software consists primarily of the Medusa program—the emulator proper—and the installation software. TOS can be placed on a hard disk partition. The installation program makes it easy to install TOS on Amiga disks or hard drives, assign Amiga drives to the Atari, create an Atari partition on hard disk, or adjust the video display.

Of course, this opens up all sorts of interesting avenues. Let's see, you could run the ST emulator on the Amiga, then run PC Ditto on the ST emulator, so you'd have an Amiga emulating an ST emulating a PC.

Or, if you have a bridgeboard, you can also install a Trackstar Apple II emulator, thus having your Amiga emulate a PC emulating an Apple IIe. Just throw in an AMAX, and then run SoftPC under Macintosh emulation.

And don't forget ReadySoft's C64 emulation program. Oh, yes, there's an Atari 8-bit emulator for the ST, too. Now just create a separate partition for everything on your hard drive and be sure to label all of your disks properly.

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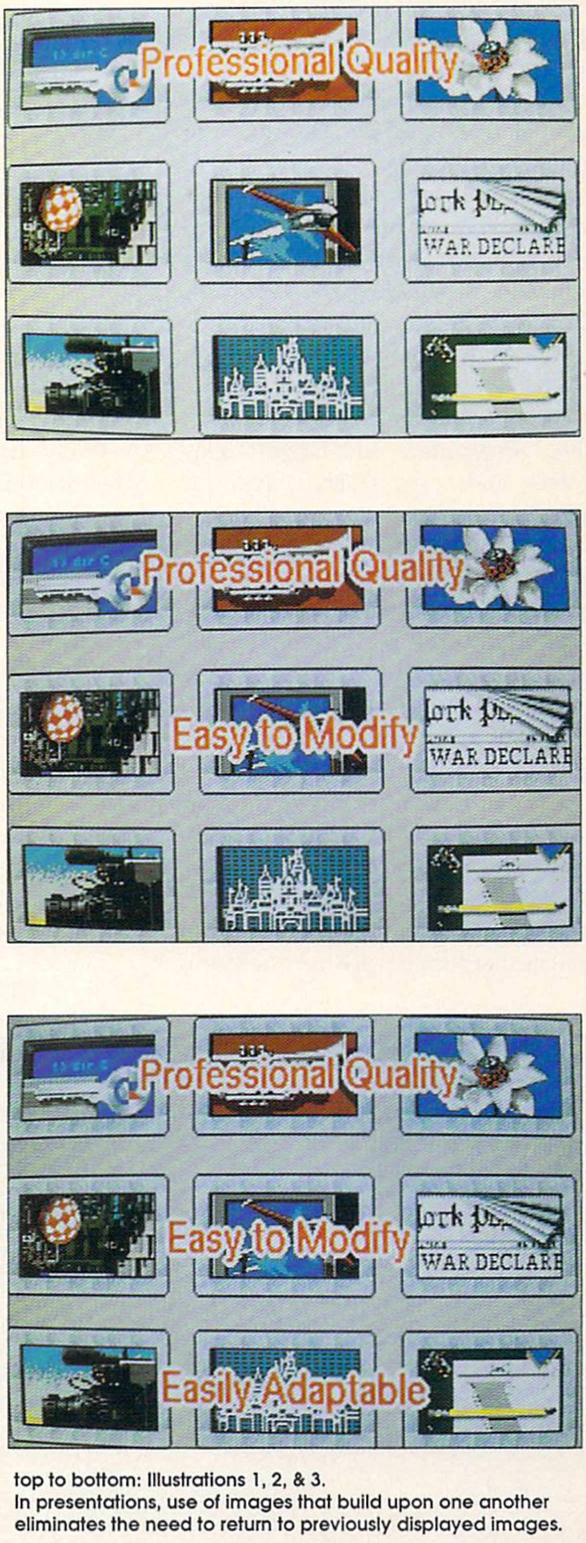
AmigaVision:

Commodore Delivers Multimedia With Every New Amiga

by John Steiner

AMIGA OWNERS HAVE HAD AVAILABLE to them a succession of presentation development products almost from the very beginning. With the Amiga's innate ability to interface with video, audio and musical equipment, it is a unique platform, ideal for multimedia program development. The Amiga multitasking environment has naturally contributed to the progression of multimedia display software. One of the most recent entries in the Amiga multimedia marketplace is AmigaVision, Commodore's own multimedia authoring system. This article describes the major features built into AmigaVision, and provides some tips and techniques for improving your own multimedia presentations.

The earliest multimedia programs were little more than simple slide shows that created presentations from a list of IFF images stored on a disk. Over time, imaginative developers created more sophisticated programs that allowed different transitions from one slide to the next. At first, these transitions were simple, limited basically to fades and wipes. Presentation programs became more capable with the addition of event-driven sequences. The first programs were time-driven, with preprogrammed pauses between "slides" (I often use the term



top to bottom: Illustrations 1, 2, & 3.
In presentations, use of images that build upon one another eliminates the need to return to previously displayed images.

slide interchangeably with IFF image or graphic). With event-driven software, key presses or mouse clicks allow progression through the sequence. The next logical advancement incorporated the ability to play sound and music files simultaneously while displaying slides, thus giving rise to true "multimedia" presentations.

Programs such as DeluxeVideo (Electronic Arts) and The Director (The Right Answers Group) began to deliver the real promise of multimedia—that of interactivity. According to a recently released position paper entitled "Amiga Multimedia—Delivering the Promise", Commodore defines multimedia as "a method of designing and integrating computer technologies on a single platform that enables the end user to input, create, manipulate and output text, graphics, audio and video, utilizing a single user interface."

The Amiga has always had these powerful interactive capabilities, but until recently, the platform has been lacking in equally powerful, easy-to-use applications that have the ability to interface with videodiscs. While enterprising multimedia specialists have been able to develop sophisticated interactive videodisc presentations on the Amiga, it has not always been easy. The Apple Macintosh has led the industry in interfacing the videodisc (probably the most powerful interactive video component available). I would speculate that the incentive to make use of videodisc technology on the Macintosh was necessitated by the fact that the tiny black-and-white Macintosh screen is woefully inadequate when it comes to presentation graphics.

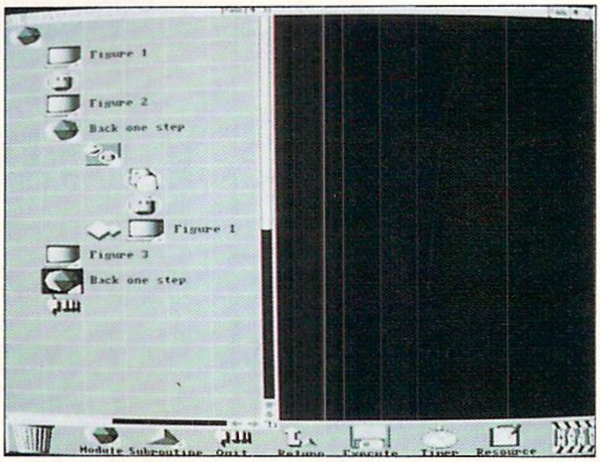


Illustration 4: Inserting a module between two screens.

Amiga developers, probably due to the Amiga's superior graphics and animation capabilities, haven't yet seen the need to provide extensive videodisc support in their applications. Nevertheless, the power of Apple's marketing muscle has made the videodisc a required component in sophisticated interactive applications. While other Amiga applications have provided videodisc support for the Amiga, AmigaVision is the first application that provides integration of *all* Amiga resources, access to a majority of videodisc brands, and a simple-to-use, point-and-click programming interface.

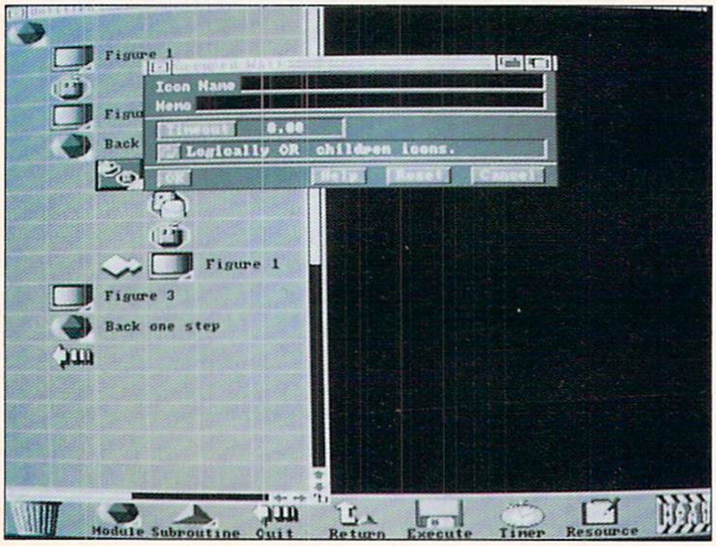

Icon Name
Memo
Timeout 0.00
Logically OR children icons.

Illustration 5: Activating the "Grouped Wait" requester.

AmigaVision is suitable for presentations as rudimentary as a slide show that changes IFF images every few seconds. Even with its easy-to-use interface, AmigaVision can also create complex interactive presentations that support touch-screen monitors similar to those found in many hotel and airport kiosks. Programming elementary AmigaVision applications is simple, and does not require any previous programming experience. There will be a lot of AmigaVision applications developed by Amiga owners in the future, considering the program will be provided to all persons who buy professional-level Amiga systems.

Previous programming experience will, however, help you develop applications that use the built-in DBase III file, compatible database modules, or such programming-oriented techniques as loops, decision-making options and subroutines. That is, you will surely have a much easier time of negotiating AmigaVision's learning curve. If you have never been a programmer, don't be discouraged. AmigaVision isn't that hard to master—you will just have to work a little harder to grasp concepts of programming that are already understood by those who have written programs in other computer languages.

AmigaVision is one of the most powerful application-generating languages ever written, with a completely graphic-oriented interface. By comparison, Hy-

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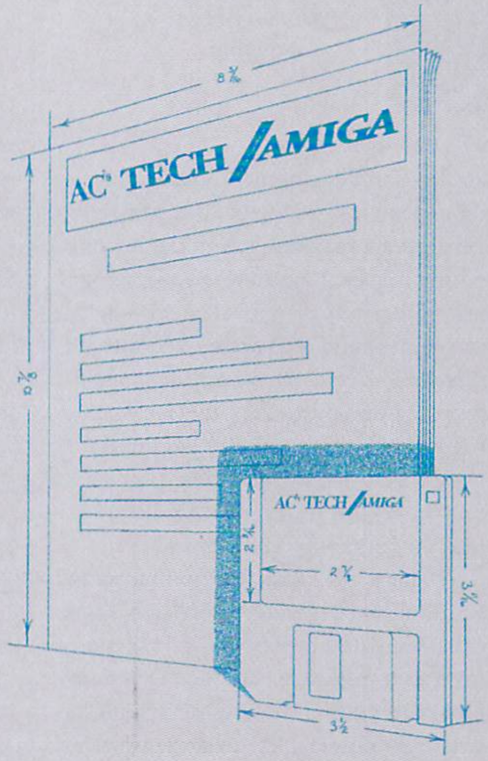

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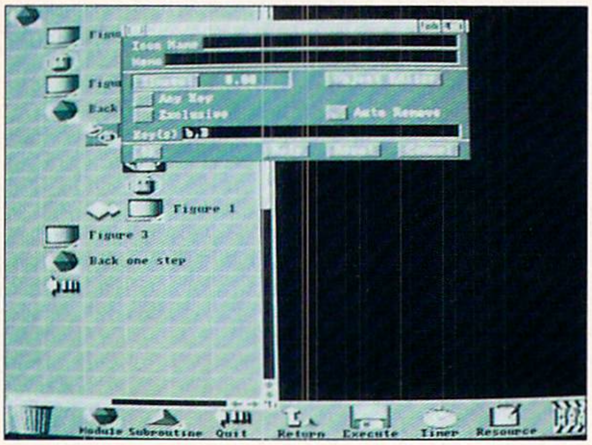


Key(s) b,B

Illustration 6: Activating the "Wait Keyboard" requester.

perCard users can perform many simple tasks when generating Macintosh multimedia presentations, but if the application programming gets very complex, the author must leave the easy and familiar Macintosh graphical user interface and complete the application in a HyperText scripting language.

Not so with AmigaVision, which always uses the graphic interface. AmigaVision's interface, while easy to use, is also very powerful, and programming structures that are extremely complex can be created with just a few mouse strokes.

Every AudioVisual requester has a preview button that shows the previous image, the chosen transition and the currently selected image or animation file. The preview menu choice allows you to test your application from virtually any point within the presentation. One of the major flaws with many programs that don't have this feature is that, when you want to test the appearance of your presentation, you always have to start at the beginning and wade through all of your work just to see the end.

I have worked with the software extensively for several weeks now, and I am impressed by its stability, even when operating in a multitasking environment with several other applications.

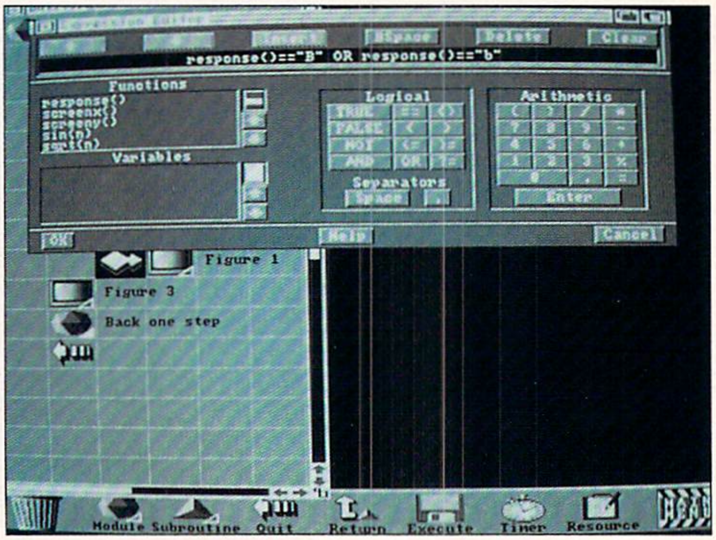
AmigaVision does have several flaws, however. The complete lack of a scripting language makes professional application development much more tedious than it needs to be. If the program generated a readable script file, it would be much easier to use a word processor or text editor to make global changes when image or sound files are moved into different directories on a hard disk, for example. Point-and-click interfaces often require too much pointing and clicking, which makes it a wearisome process as one progresses through an application to make necessary modifications.

There is a Project menu item called Runtime that generates a version of applications created on floppy disk; it can be used to transport the applications to another computer. The Runtime module has two weak points. First, even though they call it "Runtime", which usually means the application can stand alone without access to the program that created it, you must still have a copy of AmigaVision available to run any application created using the Runtime menu. Also, moving an application from one hard disk to another is unnecessarily complex if the application is spread across more floppy disks than you have available floppy drives.

In the Runtime Install option, AmigaVision asks where on your hard disk to install the application. It then reads through the script stored on the first floppy and asks to "see" each file on each subsequent floppy disk. If you put one disk in each drive you have, you never have to swap. If, however, you have fewer disk drives than you have AmigaVision application disks, be prepared for a lot of disk swapping.

To avoid all that floppy shuffling, I have discovered another way to move AmigaVision files. This technique makes it easy to refer to your images and sounds as you build your AmigaVision application, and also makes transporting applications much easier. Here is the procedure:

First, create a drawer to hold your application. In our example, we'll call it "Seminar", and put the drawer on hard disk partition FH1:. Within that drawer, create the drawers that AmigaVision usu-



```
response()=="B" OR response()=="b"
```

Functions: response() screenx() screeny() sin(n) sqrt(n)

Illustration 7: Using AmigaVision's Expression Editor.

ally creates when it makes a Runtime module. These drawers are 8SVX, ANIM, ILBM and SMUS. Copy the appropriate images and sounds into their respective drawers as necessary. Second, from a CLI, type:

```
ASSIGN AV: fh1:SEMINAR
```

Now it's time to load AmigaVision. Start the program from either the Workbench icon labeled AV, or from the CLI.

When you pull up a graphic Screen or digitized Sound icon, rather than first clicking on Directory to locate the desired file, click inside the gadget labeled Filename (the gadget located below the Directory button). A cursor will appear in that gadget. Type AV: in that gadget, and then hit the Directory button. You will see the four new directories you made to hold your presentation. Enter the desired subdirectory from this point. A significant advantage of this technique is that you won't have to type FH1:Seminar every time you want to refer to the application; just call it AV:.

Once the application is complete, it's time to move it. Let's say that the application contains six floppy disks full of image and sound files. You can use Quarterback or any other hard disk backup utility that lets you specify assigned devices. Simply refer to the hard disk volume as AV:, and your backup utility will display only the AmigaVision directory just created. Now, when you back it up, you will only back up your seminar-related files to floppy.

When you are finished with the backup, take the disks to the computer you want to transfer the application to. Make a subdirectory called "Seminar" on that hard disk. In our example, let's say we want to put the directory on a hard disk labeled DH0:. From a CLI, type:

```
ASSIGN AV: DH0:SEMINAR
```

When you choose Restore from the hard disk backup utility, tell the utility that you want to restore the volume AV:. All files and subdirectories will be quickly and easily transferred.

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While this procedure makes transferring AmigaVision applications easy, it has one major drawback: Every time you want to run the application, either on the originating computer or on any of the computers the application was transferred to, you will have to assign the name AV: to the appropriate subdirectory. This can be done automatically, by placing the assign command in your s:startup-sequence file. That way, the assign will be issued every time you start up the computer system. Alternatively, you can create a script file for use with ICONX that executes the assign just before you run the AmigaVision application.

Sophisticated AmigaVision applications must be executed from the hard disk if you want to avoid excessive disk swapping, and you will probably not keep an AmigaVision application stored on your hard disk for any length of time after you have finished using it. If you do want to store several different AmigaVision applications on the same hard disk, create a file called AVAssigns and store it in your S: directory. Keep all your AmigaVision ASSIGN commands in that file, if you wish. A sample AVAssigns file might look like this:

```
assign MQZ: DH0:MATHQUIZ
assign MAP: DH0:MapTutor
assign SP: DH0:Speller
```

(etc.)

In your s:startup-sequence file, just before the ENDCLI > NIL: command at the end of the script, insert the line

```
EXECUTE  S:AVAssigns
```

All the appropriate assigns for your AmigaVision applications will be done automatically when the computer finishes its startup-sequence.

When giving a presentation, it seems that whenever I finish talking about one

Visions of American History

One of the first users of AmigaVision was Scholastic, Inc., an international educational publishing company. They have been working since November, 1989 on an interactive, personal-computer-based instructional system which will be distributed to schools via their extensive educational marketing channels.

The project that is currently under development, according to a Commodore press release, is entitled "Visions of American History: Struggles for Justice". The package focuses on six groups—African-Americans, native-Americans, Latinos, women, immigrants, and the labor movement.

I spoke with Noam Gelfond, a Commodore representative familiar with the project. He told me that Volume 1 of the two-volume videodisc set should be ready in the fall. When "Visions" is complete, there will be other AmigaVision applications added to their library.

In "Visions of American History", AmigaVision allows users to search the videodisc by choosing from icons displayed on a selection menu. Once a sub-topic is selected—for example, the history of African-Americanism—the student gains access to maps, charts, timelines, photographs, drawings, documents, speeches, and even news footage pertaining to that topic.

Interactive multimedia applications in science, history, and mathematics have been available on other platforms, notably Hypercard on the Macintosh and Link-Way on the IBM. However, AmigaVision is clearly the easiest to use for those educators who don't have the time or desire to learn a programming language to create educational applications. —*J.S.*

slide, and move on to display the next slide, someone asks about something pertaining to the previous slide. I once attributed this phenomenon to inattentive listeners, but being somewhat more charitable nowadays, I believe it's due to the fact that when the audience gets a chance to see the next slide in a sequence, a new question is triggered that necessitates returning to the previous slide.

One way to avoid this interruption of the pre-planned order of display is to build slides in a sequence. Illustrations 1 through 3 demonstrate an example that outlines the three major parts of one particular topic. The reference to the first item on the list, shown in Illustration 1, is still available to the presenter in Illustrations 2 and 3, should a question from the audience be posed. For those of us who find the creation of unique and creative visuals for background screens to be excruciatingly difficult, this technique yields a bonus, in that the background image only has to be created once.

Many times, however, there is so much information on a slide that duplication of it on the next slide is not practical. A technique has to be developed that allows the presenter to return to the previous slide, should the need arise. In presentations I have done previously using other Amiga-based presentation tools, this has proved to be so difficult that I just haven't made the effort. References to previous slides were then almost always made without visual clues, unless I also happened to have printed materials available to assist me in answering questions.

AmigaVision has eliminated this problem. When creating a presentation in AmigaVision, I still use the multiple-slide techniques shown in Illustrations 1 through 3, and I also now use an AmigaVision programming technique to "back up", should the need arise. Illustrations 4 through 7 demonstrate how the technique can be used to program AmigaVision to return to the previous slide in a presentation.

The actual AmigaVision programming code is shown in Illustration 4. The module titled "Back one step" contains the icons which do the work. A Wait icon is defined that has two children, keyboard and mouse icons. The last icon in Back one step is a C Goto (conditional Goto) icon. In my example, I want to go from the Screen icon labeled "Figure 2" to the Screen icon labeled "Figure 3", unless I need to return to the previous slide defined in Screen icon "Figure 1". If I click the left mouse button, the program moves on to the next slide. If I press the B key (either upper or lower case), the next slide shown is actually the previous slide in the sequence. Essentially, the slide show takes one step backwards. Any other key presses are ignored.

To duplicate this technique in your presentations, you need to create your own Back one step module. First, from a New Flow screen, find a couple of Screen images, and set them down to display, one after the other. Label the icon names Figure 1 and Figure 2 to correspond with the names I have used in the illustrations. Then, as shown in Illustration 4, insert a module between the two screens called "Back one step". Next, add the children icons as shown. Set up each icon by following these procedures:

1) Double click on the Wait icon. That will bring up a requester identified as "Grouped Wait". Make sure that your requester matches the requester shown in Illustration 5. When you are finished, click on the "OK".

2) Double click on the Keyboard icon. You will bring up a requester identified as "Wait Keyboard". Enter both a lower case and an upper case B, as shown in Illustration 6 in the Key(s) gadget. Make sure that your requester selections match the selections shown in Illustration 6.

3) Double click on the C Goto icon to bring up the expression editor. Using the mouse, scroll through the Functions list to find "response()" then click on it. Click on the "==" in the section of the requester

labeled "Logical". Then from the keyboard, enter "B" in upper case. Press the spacebar once, then click on the "OR" in the "Logical" section. Add another space and click on "response()" again. Finish by adding the "==" and a "b" to the formula as shown in Illustration 7. You need to have the letters B and b in quotation marks, and you must also have spaces surrounding the word OR for this technique to work right. When your requester looks like the one in Illustration 7, click on OK.

4. The last necessary step in creation of the module is to reference the conditional Goto. You may have noticed that your C Goto has a white box that contains an X. This icon must be referenced to the Screen icon labeled Figure 1. Double click on the white box. This will bring up a requester that states:

```
Placeholder icon selected:
Begin reference icon specification?
```

Select OK. Then double click on the Screen icon labeled Figure 1. A requester labelled "Complete Referencing ?" will appear. Simply click on OK to finish the referencing process.

That's all there is to this procedure. To use Back one step, duplicate the module each time you want to add the back-up function between slides, insert the duplicated icon between the two Screen icons, and reference the Placeholder icon to the Screen icon to which you might want the program to return. Of course, you could extend the concept to return to a previously completed section of your presentation as well. You can also activate other keys to perform various additional functions, by first identifying those keys in the "Wait Keyboard" requester, and then checking for keyboard selection by using the response() function in additional C Goto icons.

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AmigaVision has a copy function that is invoked from either the Edit menu, or by pressing Right-Amiga C. Once you are in copy mode, every icon selected is copied to its new location, rather than moved. I have found a quicker way to make copies of icons, rather than by using the built-in copy function. When AmigaVision loads, it automatically opens a new application window. Move this window to the right half of the screen, and then either open or select a new application to work with. Create your application in the left window, but if you need to copy an icon, first drag it over to the right window. AmigaVision will copy that icon into the other window, rather than move it, as it would do if you were to drag the icon to a different position in the same flow. The next time you need to use a copy of the icon you stored, drag it over to your application from the right window and make the necessary filename (and other) changes to make it work with your current project. This process is much faster and easier than having to switch between Move and Copy modes.

I hope you find these tips to be useful in the creation of your own AmigaVision presentations. If you have yet to buy a package for this purpose, consider AmigaVision—it is certainly one of the best. •AC•

Editor's Note: At press time, we learned that AmigaVision has been upgraded from the version 1.31 reviewed here to version 1.53G. Among the enhancements are the following: 2.0 compatibility was added; Runtime was changed to Applications and the process for installing an application was refined to minimize disk swapping; a Configuration menu was added with the following choices: "Workbench Closed" (toggles Workbench on and off to free memory), "Video Setup" (moved from Project Menu), "Preferences" (allows user to set language, date format, and numerical format); the videodisc controller was redone, making it easier to save the settings to the Video Icon; the ability to label Quit, Return, and Exit Loop icons was added; and several functions were added to the Expression Editor.

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bug bytes

by John Steiner

THE MAILBAG IS FULL AGAIN THIS month! Some new problems have been brought to our attention, some old problems have been solved, and a couple of upgrade notices have been thrown in for good measure.

IN COMPUSERVE EMAIL, I RECEIVED a letter from Rocky Lhotka, who asks about a desktop publishing program called Publisher Plus. He writes, "It is an acceptable program, but could use an upgrade seriously. Do you know if there have been any upgrades for it?" In the latest *AC's Guide To The Commodore Amiga*, the product is no longer listed, which indicates to me that the program is no longer being published. If you have any information on upgrades, or the continued publication of this program, please pass the information on to me, and I'll see that Mr. Lhotka gets it.

VIA PEOPLE LINK EMAIL, I RECEIVED a response from Joe Gottschall, an Amiga service technician in Glen Burnie, MD. In the September issue, I discussed problems with A2000 motherboards brought to my attention by Rawli Puig. Joe commented in his letter that Mr. Puig's problem could actually have been caused by a shorted EMI (electromagnetic interference filter) on either the parallel port or the disk drive port. The Paula chip could also be at fault for his problem (inability to run Digi-View 4.0 (Gold) on his A2000).

I RECENTLY RECEIVED EMAIL RESPONSES from Sylvain Duford and Wayne Cole via CompuServe with regard to Tom Gist's problems with M2Sprint (first noted here in V5.6). Both letters supplied similar solutions in different modules, and I forwarded all the information to Mr. Gist.

According to Mr. Duford, in version 1.0 of M2Sprint the REAL conversion routines contained several bugs, most of which were fixed in version 1.12, except for the one that causes the 0.5 error. The fix is easy. Just change the following line in RealConversions.mod:

```
num:=num+PowerOfTen(-D)*0.5
```

becomes

```
num:=num+PowerOfTen(-D-exp)*0.5
```

and in LongRealConversions.mod:

```
num:=num+PowerOfTen(-D)*0.5D
```

becomes

```
num:=num+PowerOfTen(-D-exp)*0.5D
```

According to Wayne Cole, other changes need to be made as well. In the ConvLongRealToStr procedure of the LongRealConversion module, the line in the round-off portion of the procedure that reads:

```
num:=num+PowerOfTen(-D)*0.5D
```

becomes

```
num:=num+PowerOfTen(-D-exp)*0.5D;
```

A similar change needs to be made in RealConversion's ConvRealToStr procedure, only in single precision:

```
num:=num+PowerOfTen(-D)*0.5;
```

becomes

```
num:=num+PowerOfTen(-D-exp)*0.5;
```

The modules should then be recompiled, along with their respective .def files to satisfy revision checking, and the .lnk and .sym files copied into the M2 subdirectory. Mr. Cole goes on to comment that the calculations and values carried in the program are correct. The error is introduced when converting to a string for output.

STEVE TIBBETT, AUTHOR OF VIRUSX, has left a warning on People Link's Amiga Zone for those who may have obtained a copy of VirusX labeled version 5.02. "5.02" is yet another previous version of VirusX, with the digits changed to make it look like a new version. There is no update to VirusX past version 4.01, as of this writing.

If you see VirusX version 5.02, kill it. The latest version, 4.01, is now compatible with Workbench version 2.0, and also allows the option of running without opening a window on the Workbench screen. Its virus detection capabilities are basically the same as version 4.0. VirusX is freeware, and can be obtained via most electronic information services, and on BBS systems around the country.

COMMODORE HAS CHANGED THEIR warranty service procedures on the following products: A500, A590, A1011, C64C, C1541-II, C1581.

These products now have a sticker covering one of the screws that are used to assemble and disassemble the units. If you damage the sticker by opening the case, you will no longer have warranty protection. Authorized service centers have received a supply of stickers similar to the original stickers, except in a different color. Units that have been fixed inside the one year warranty period are having these stickers reaffixed. The different color stickers for dealers allows Commodore to determine if the unit has been previously serviced in warranty.

Commodore has instituted this policy because they say that too many end users have been opening these units themselves and ruining them in the process, before trying to bring them into dealers for warranty service.

SUPPORT FOR THE LATTICE C COMpiler for the Amiga has now been assumed by SAS Institute of Cary, NC. SAS originally developed the compiler. The compiler (now called SAS/C Compiler Version 5.10 for AmigaDOS) has just been upgraded to release 5.10. If you have version 5.0X, you can upgrade for only $40 ($100 if you have 4.0x, $125 for prior versions). Registered owners should send SAS their serial number to verify their upgrade eligibility.

Commodore has changed their warranty service procedures on the following products: A500, A590, A1011, C64C, C1541-II, C1581.

New features of the Compiler include AmigaDOS 2.0 support (include files, as well as 1.3 include files), increased #pragma limit, screen editor support of ARexx, an improved Workbench interface and several other performance improvements.

Technical support is now being provided, at 1-900-786-7200. The phone charge is $2 per minute. *SAS Institute Inc., SAS/C Compiler Version 5.10 for AmigaDOS Sales Dept., SAS Campus Drive, Cary, NC 27513-2414, (919) 677-8000, ext. 5042, FAX: (919) 677-8123. Inquiry #200.*

I RECEIVED AN UPGRADE NOTICE via People Link's Electronic Mail from Gerald Hull, author of an improved version H-P DeskJet printer driver. According to the mailing, owners of DJHelper—Creative Focus's general DeskJet utility—with serial numbers under 093-770 should make sure they have sent in their registration sheets to receive a free upgrade. They will also receive information on DJFonts Volume 1, a three-disk collection of converted soft fonts for all DeskJets, now available for $20.00 from Creative Focus.

The DJHelper revision corrects a number of potential problems and incorporates improvements to the interface, as well as to the accuracy and robustness of the font conversion routine.

Creative Focus can be reached through ghull on BIX and DRJERRY on PLink. *Creative Focus, Box 580, Chenango Bridge, NY 13745-0580,* (607) 648-4082. *Inquiry #201.*

KEVIN DAVIDSON LEFT A NOTE FOR me on People Link saying that Soft-Logik is taking phone orders now for PageStream version 2.0 upgrades. You can call them and order it direct if you have your registration number available.

For owners who upgraded to 1.8 from 1.6 for free, the price is $75. For registered owners who paid the $25 to upgrade from 1.6 to 1.8 and got the new 1.8 manual, the price is only $50. If you bought 1.8 directly, the upgrade fee is $75.00.

If this is a bit confusing, relax! Soft-Logik will tell you which category you fit into when you call. *Soft-Logik Corporation, 11131 S. Towne Square, Suite F, St. Louis, MO 63123, (314) 894-3280, 894-8608. Inquiry #202.*

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AN UPGRADE TO WORDPERFECT FOR the Amiga is being promised, on both WordPerfect Technical Support lines, and their BBS. The upgrade promises additional printer support, as for the HP II-D, HP II-P and HP III printers, the new Citizen GSX140, and others. Also, full compatibility with Workbench 2.0 is promised for the new version. Registered owners can call WordPerfect's technical support number for details, which should be available as you read this.

HEWLETT-PACKARD HAS RELEASED the DeskJet 500, an improved model over both DeskJet and DeskJet plus. The DeskJet 500 costs $729 retail. New features include a water-resistant ink, 2 additional internal fonts, kerning, and improved speed.

You might be wondering why I would mention a new model printer in this column. Here's your answer—according to a release from H-P, if you own one of the earlier printers, you can actually upgrade your printer to the same specifications as the DeskJet 500. The cost of the upgrade is $225 for DeskJet owners, and $175 for DeskJet Plus owners.

To receive instructions on how to upgrade, call H-P at (208) 323-2551. *Hewlett-Packard Company, 16399 W. Bernardo Drive, San Diego, CA 92127-1899, (619) 592-4676. Inquiry #203.*

MIGRAPH'S HAND SCANNER HAS been delivered with a pre-release version of Touch-Up, the scanner painting software. Version 1.0 is now available, and features compatibility with Workbench 2.0, as well as the ability to export images to a user-selectable 16- or 31-level greyscale IFF file format. This greyscale capability allows you to import your scanned images into high-end color paint programs.

Registered owners of Touch-Up versions earlier than 1.0 will receive upgraded versions at no charge. If you haven't heard directly from Migraph, or you have questions about the upgrade, you can contact Migraph at (800) 223-3729. *Migraph, 200 S. 333rd, Suite 220, Federal Way, WA 98003, (206) 838-4677, FAX (206) 838-4702. Inquiry #204.*

OXXI, INC., LONG-TIME AMIGA software developer and marketer, has announced that AudioMaster III is shipping. The new version offers multiple loop capability, expanded sampler support, compressed data-save format, voice activation, and a greatly expanded list of sampling, mixing, and editing functions.

Also provided with AudioMaster III is the CD Player Simulator. Standard CD controls let you play up to 20 selections in the background as you work on other tasks.

Registered users of AudioMaster II can obtain an upgrade to the new version directly from Oxxi for $25.00. *Oxxi, Inc., Box 90809, Long Beach, CA 90809-0309, (213) 427-1227, FAX (213) 427-0971. Inquiry #205.*

That's all for this month. If you have any workarounds or bugs to report, or if you know of any upgrades to commercial software, please notify me by writing to:

John Steiner
c/o Amazing Computing
P.O. Box 869
Fall River, MA 02722-0869

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•AC•

PD Serendipity

Insight into the World of Public Domain Software for the Amiga®

MUNCHO

Insert a disk and Muncho responds with a "GULP", remove (eject) a disk and Muncho responds with a "YUCK". You can replace these sound files with any digitized sample file. Muncho can be found on Fred Fish Disk #137. *Author: Andrew Werth Enterprises*

BOOTBLOCKS

Bootblocks, by Jonathan Potter, is a documentation file containing an in-depth description of bootblocks. Mr. Potter starts by explaining what bootblocks are and their functions. He mentions that bootblocks "provide the most common medium for the spread of viruses."

A copy of two custom bootblocks are included, along with a step-by-step explanation of each coded line. Each line is numbered in the bootblock examples with a corresponding description underneath. This description explains the function of each line. Also mentioned is how to go about writing a custom bootblock. Bootblocks is on Fred Fish Disk #242.

SUPERVIEW 3.0

SuperView is an IFF display program. It can be run from the CLI or Workbench. To run SuperView from Workbench, icons for the pictures you want to display are needed. Click once on the SuperView icon, then hold down the shift key and double click the picture icon you wish to view.

When done viewing a picture, hit the Esc key to abort. When a picture first loads, color cycling usually takes place. This is when the screen flashes the picture in several colors. To stop this, hit the tab key. The tab key acts as a toggle switch. If for some reason you want color cycling back on, simply hit the tab key again.

SuperView allows you to view a large bitmap picture (this is when a picture is too large to fit on the screen so only part of the picture is shown until you scroll to view more of the picture). Simply hold down the left mouse button to scroll around in the picture.

To run SuperView from the CLI, type:

```
> superview [option[...]] <filename>
```

---

by Aimée B. Abren

SuperView has nineteen different options to be used when viewing a file or files. Two new options include 1) -j<n> (force <n> Jiffies between frames) and 2) -n (no ANIM, show picture only). These options must be placed before the filename. An option is not necessary, however. Other options include -d, to view all pictures in a directory, -v to stop animation after one time through, and -r to repeat the command line.

One option which is neat is the -s<n> option. This option allows you to choose how many seconds you wish to have a picture displayed on the screen. You can choose several pictures to be displayed, then set the -s option at n number of seconds to have a small slide show of your pictures.

SuperView V3.0 can be found on Fred Fish disk #367. This version includes several new features as well as some bug fixes. SuperView now supports Type 5 animations. These are animations created with DPaintIII, and VideoScape2.0. Two new control keys have been added to work with animations. The spacebar now acts as a toggle switch to start and stop animations. Also, the return key allows you to step through an animation.

Other new features, previously mentioned are the return key acting as a toggle switch to turn color cycling on and off, and the -j and -n opitions.

The documentation included with SuperView is well written. Display options are listed along with a full explanation of each. Some examples are included, which I find very helpful when trying out a new option. Pointed out in the documentation very clearly are the features supported and new additions.

SuperView is shareware, so if you try this program and like it (I think you will), please send the author, David Grothe, a donation so he will keep updating this fine program.

Editor's Note: Amiga users interested in having their program(s) considered for inclusion in the Fred Fish library can submit their program(s) to Fred Fish, c/o Amazing Computing, P.O. Box 869, Fall River, MA 02722-0869. We will forward any such programs to Mr. Fish.

UPDATES

FileMaster V.1.20 - a file editor, similar to NewZap or FedUp, which allows you to manipulate bytes of a file.

Changes include the removal of "busy wait" in the file requester and the Y and N keys can be pressed to reply to yes and no requester gadgets.

FileMaster runs from both the CLI and Workbench. Also it runs on PAL and NTSC computers. FileMaster V.1.20 can be found on Fred Fish Disk #361, an update to Fred Fish Disk #298.

Includes source in Assembly. *Author: Roger Fischlin*

Fenster V. 2.2 - allows the user to modify windows from other programs. Modifications include such things as close, change size, move window to background, etc.

Updates to Fenster include the XColor library support added and MENUPICK is now replaced with MOUSEBUTTON. The ARP library is needed to run Fenster, and the COLOR library or XColor library are needed to use the color requester functions.

Fenster V2.2 is found on Fred Fish Disk #362, and is an update from V2.1 on Fred Fish Disk #305. Includes source in Assembly. *Author: Roger Fischlin*

DPFFT V2.2 - "DPFFT includes the ability to plot a Fast Fouries Transform (FFT) of the data, customized amplitude and phase spectrum, prewhitening capability and a Welch window for spectral smoothing."

A serial correlation, an EWK(Einstein-Wiener-Khinchine) transform, normalised-linear and log-log spectra, and a 3-D display of various FFT-spectras have been added to this updated version. DPFFT V2.2 is found on Fred Fish Disk #364 and is an update to DPFFT on Fred Fish Disk #324.

DPFFT runs from both the CLI and Workbench. Includes binary only. *Author: A. A. Walma*

UPDATE V1.14c - A command like the AmigaDOS Date command with some UNIX similarities. One neat feature of UPDATE is that it automatically adjusts for Daylight Savings Time.

UPDATE V1.14c is found on Fred Fish Disk #365, an update to Fred Fish Disk #311. Includes binary only.
Author: George Kerber

Fortune V2.04g - randomly selects a fortune and will either voice the fortune or display it on screen. A fortune data file is included for your own editing.

Fortune now searchs the current directory for the "fortunes" file along with ram: and s:. Fortune V2.04g is found on Fred Fish Disk #369 and is an update to Fred Fish Disk #311

Runs from both the CLI and Workbench. Includes source.
Author: George Kerber.

SKsh V1.5 - a shell very much like UNIX Ksh-like shell. All function keys are now supported, as well as ARexx. The EOF (End Of File) no longer crashes when the +e option is used.

Future plans include a better use of ARP and more UNIX-like commands. Two known bugs are 1) the function definitions cannot be listed with the "set" command, and 2) the Exit command does not work correctly in a script or function.

SKsh V1.5 is on Fred Fish Disk #370, an update to version 1.4 on Fred Fish Disk #342. Includes full documentation.
Author: Steve Koren

•AC•

SAVING VD0:

by Mark Cashman

What's it like to work for three hours on a complex modification to a set of programs, and then to encounter, not the Guru, but utter and total power failure? And to make things worse, you were working in RAM on the VD0: recoverable RAM disk, and it was not copied back to disk...ever!

WELL, I THREW A FEW NEARBY OBJECTS AROUND, waiting for the power to return. Then I spent a feverish two hours redoing all the changes. Luckily, I had good memory—in my head, not the computer.

But why depend on the head, when a computer can be much less fallible? So I took a course—checkpointing—which is often followed in large data processing installations. To take a checkpoint is to copy data from a volatile medium (like RAM) to a non-volatile medium like disk. This can be done manually by using the CLI or a directory utility.

However, it is better to use the innate multitasking ability of the Amiga to provide this capability automatically. In my case, I chose to use ARexx, the powerful programming language implemented for the Amiga by William Hawes.

I assume you know something about programming. Like what programs, variables and strings are. Also, I assume you know what console windows are. You will also need to know how to use the CLI and a text editor. Probably you are a C or Modula-2 programmer who uses VD0: (the public domain recoverable RAM disk from ASDG) to save programs in a fast and convenient location that can survive warm reboots (i.e. Gurus or CTRL left Amiga right Amiga). If you use the new RAD: in Amiga Workbench 1.3, just take me to mean "RAD:" when I say "VD0:".

This example is geared toward use with my Modula-2 programming system, so it only checkpoints Modula-2 source and object code. You can change the copy command in the program below to checkpoint whatever you prefer. Here's the ARexx code:

```
/* This program backs up vd0: every 'Interval' minutes
until no more */
/* Copyright Mark Cashman 1989 */

  PARSE ARG Interval

  IF Interval = “” THEN Interval = 15

  DO FOREVER

    “Wait ”||Interval||” mins”

          'Copy  >”CON:400/22/240/100/Backup  VD0/s”
vd0:#?.(def|sbm|mod|obm|rfm) to Backup:'

   Ignore = OPEN(“Console”,”CON:400/22/240/20/Backup
VD0/s”)

    Ignore = WRITECH(“Console”,”Continue? “)
    Answer = READCH(“Console”,1)

    Ignore = CLOSE(“Console”)

    IF UPPER(Answer) = “N” THEN LEAVE

  END
```

WHAT DOES IT MEAN?

First, the programming conventions. I write ARexx something like Modula-2: ARexx keywords capitalized and variable names in upper and lower case. It doesn't have to be done that way. Second, it can be created with any text editor. I used my Modula-2 development system editor, m2ed.

To run it, you will need ARexx. Also, you will need William Hawes' ConMan, or you can leave off the extra options in the definition of CON:. See below for further explanation.

I also use William Hawes' WShell for my CLI, from which this ARexx program is launched. That matters only because WShell interfaces directly to ARexx. I will show how this program is launched from WShell, and then how to launch it from the CLI. There is not much difference.

> *"But why depend on the head, when a computer can be much less fallible?"*

AND NOW THE PROGRAM

The first line says -- read the command line that invoked this program, take its second word (often called an argument by programmers, for some reason having to do with functions in mathematics, though what they argue about, I have no idea), and put it in a variable called "Interval". In ARexx, variables are all considered to contain strings. When necessary, a string is interpreted as a number.

Now, check the contents of "Interval". If there is nothing in the variable – that is, it is equal to something called the null string, represented by two quotes next to each other ("") – then set the variable to the number 15. This is called "defaulting", which means to set a value when the user does not specify one. This statement means "When the interval isn't specified, it's 15."

"DO FOREVER" starts the loop. It means that whatever follows will be repeated over and over until the matching line that says "END". "DO FOREVER" and "END" are like parentheses. One opens, the other closes. Of course, other "DO FOREVER" and "END" pairs can exist inside the first, but that is not required for this program.

The next line is more interesting. When there is a line in an ARexx program that starts with a single or double quote, it is considered to be a "host command". A host command is a command to be issued to the current host – in this case, the Amiga Command Line Interface. It can be any ARexx expression: perhaps a variable, a string in quotes, or an expression composed of variables and strings. In this line, the host command calls upon the Amiga Wait command to have the ARexx program wait for however many minutes are specified in the variable "Interval".

Note the double bars "||" between the command name "Wait" and the variable "Interval". These are AREXX's way of connecting two strings or a variable and a string.

So, fifteen minutes have passed, and the Wait command is done, and the ARexx program picks up at the next line. The next statement in the loop is a host command to copy all of the files from vd0:, that end with ".mod",".def",".sym",".obm", and ".rfm", to a disk named "backup:". The first part of the Copy command redirects the output from the copy (the text output, which shows what files are being copied, as they are being copied) to a console window (CON:) at the specified position and size, with the title "Backup VD0" and the special ConMan option "s" which specifies the sizing gadget should not be attached to the console window. When the copy is completed, this window is automatically closed.

The next statement opens a console window of a different size in the same position. The return code from the command is ignored by putting the result into a variable called "Ignore". The console window is identified by the name "Console" in subsequent reads and writes, as specified in the first argument to "Open".

Now the program prints "Continue?" in the window, and reads a character from the window into the variable "Answer". Once the character is read, the console window is closed. Then the character is shifted to upper case (allowing the user to type in upper or lower case as convenient) and checked.

If the character is "N", then the loop is exited, as indicated by "LEAVE". Otherwise, the program starts the loop over, executing "Wait" again; after "Interval" it takes another checkpoint.

Some of the reasons for the decisions I made in designing this program are not obvious. For instance, why open a new console window each time to request "Continue"? Because that causes the new window to appear at the top of the stack of windows on the Workbench screen, and makes it the active window. Usually, while this backup program is running, I am programming – using m2ed or the CLI. If I am in the editor, the editor window typically fills the entire screen. When the "Continue?" window pops to the top, it is the active window, and all I have to do is type "y" or press RETURN to continue. Then I can go back to whatever I was doing when the window appeared. This would not be true of a window that stayed around all the time, since such a window, shuffled to the back by the opening of the editor window, would stay there.

This also has something to do with why the program tests for "N" rather than "Y". When the "Continue?" prompt console window appears and is made active, the chances are that I am typing. Thus, what I am typing is immediately redirected to the new window when it opens. If I press RETURN, it is possible I will have (erroneously) responded with part of a line of code or a command to the "Continue?" prompt. If the program took anything other than "Y" to mean terminate, this error would cause the backup to terminate, and I would have to restart it. By

(continued on page 78)

C NOTES From the C Group

by Stephen Kemp

IF YOU EXAMINE C PROGRAMS THAT HAVE A little age on them, or that were programmed by more traditional methods by more traditional programmers (myself included), you have probably seen definitions like these:

```
#define SUNDAY    0
#define MONDAY    1
#define TUESDAY   2
#define WEDNESDAY 3
#define THURSDAY  4
#define FRIDAY    5
#define SATURDAY  6
```

Even if you haven't seen these specific definitions, you have probably seen similar types of definitions that involve a series of related definitions. Perhaps you have even made these types of definitions in your own programs. There isn't anything wrong with this programming method, but you might want to consider another method available with current renditions of C compilers. These types of definitions are usually referred to as "enumerated" data types.

Enumerated, as you can guess, simply means that each definition is assigned a number—usually the next sequential number. Numbering is, by far, the easiest way for us to distinguish a series of related items. Current C compilers now offer the type definition keyword "enum" to define such items. For example, we can define the days of the week presented earlier like this:

```
enum        DAYS {
    SUNDAY,
    MONDAY,
    TUESDAY,
    WEDNESDAY,
    THURSDAY,
    FRIDAY,
    SATURDAY
    };
```

Using the enumerated definitions, a programmer can more easily design programs that distinguish between the days of the week numerically. The definitions are identical to those made with the #define declarations above. With similar definitions you can enumerate months, colors—just about anything you can imagine. These definitions can be used in programs just like the #define ones shown above: var = MONDAY; x = SATURDAY; etc.

In most instances, the values assigned to a group of this nature is not as important as the definition names themselves. After all, you are more likely to write statements that reference the definition names and not the explicit values. By default, the compiler will assign the number 0 to the first definition name. Each succeeding definition will receive the value of the previous definition plus one unless overridden by an explicit value. For instance we can define values of the days beginning at one like this:

```
enum  COLORS {
    RED = 1,
    BLUE,
    GREEN,
    YELLOW = 12,
    PURPLE
    };
```

Notice that RED was assigned the value 1. BLUE, since it has not been overridden, will be assigned the value 2; and GREEN 3. The assignment of 12 to YELLOW has been included to demonstrate that you can change the numbering at any point. Succeeding definitions still receive the preceding value plus one.

The disadvantage of using the traditional coding methods (#defines) is that the "groups" of definitions sometimes become lost among the other statements. If you realize that every program requires maintenance and updating at some time or another, then you can probably see how easy it would be to mistakenly reuse a number assigned to another definition. Making a mistake like this might go unnoticed in your program for a long period and probably would be difficult to debug. To try to avoid these types of problems, you might want to consider grouping your constant definitions using the enum type.

If it were possible to add another day of the week (hopefully another weekend day), you would simply insert the definition's name at the appropriate point in our DAYS group definition. Of course, there aren't any more days to add. With the COLORS enumerated type, however, the possible definitions are almost limitless. When it becomes necessary to add another color, it is as simple as deriving a new name and inserting it within the group.

Another advantage of grouping the definitions with the enum type is that each group can be given a name and can then be used to define other objects of that type. For instance, it is now permissible to define variables like these:

```
enum  DAYS   dow;
/* definition to hold a day of the week */
enum          COLORS crayon;
/* definition to hold a crayon color */
```

Technically, these definitions are integers that can hold any valid integer value. Your compiler will not usually attempt to ensure that you only assign appropriate values. The programming advantage of group names is realized in the self-documentation provided in your code. If you see a definition of type DAYS, it is obvious to you what the variable will contain—at least more so than if it were simply defined as an integer type.

Enumerated data types are not new to the programming world, but the enum type is relatively young within the C programming environment. Although you may not have used them in the past, you may want to give them a try.

•AC•

(Saving VD0:, continued from page 76)

checking for an explicit "N" and assuming that anything else is "Y" (no matter what it really is), I help keep things convenient for myself.

For that matter, why have a separate console window for the copy? This is really a matter of taste, but my reasoning was that the backup program runs in the background and should only disrupt the display while it is running. Also, the opening and closing of the windows reflects the structure of the task, and thus it is (to my taste) more aesthetic in its operation.

How is this program started? The following are the relevant commands from my Modula-2 programming startup script "m2":

```
copy sys:s/(backup|backup_vd0) to vd0:

newcli "CON:320/360/320/40/Backup Shell/bdms" from backup
```

The "backup" script is a simple one, needed for the "newcli" command in "m2".

```
backup_vd0

endcli
```

The "newcli" command in "m2" runs the "backup" script as a separate task with a console window for its error messages. The "backup" script calls the "backup_vd0" ARexx program. Because I use WShell for my CLI, I can reference an ARexx program with nothing more than its name. If you do not have WShell but do have ARexx, you would change the "backup" script to read:

```
sys:c/rx backup_vd0

endcli
```

where "sys:c/rx" invokes ARexx on the command "backup_vd0".

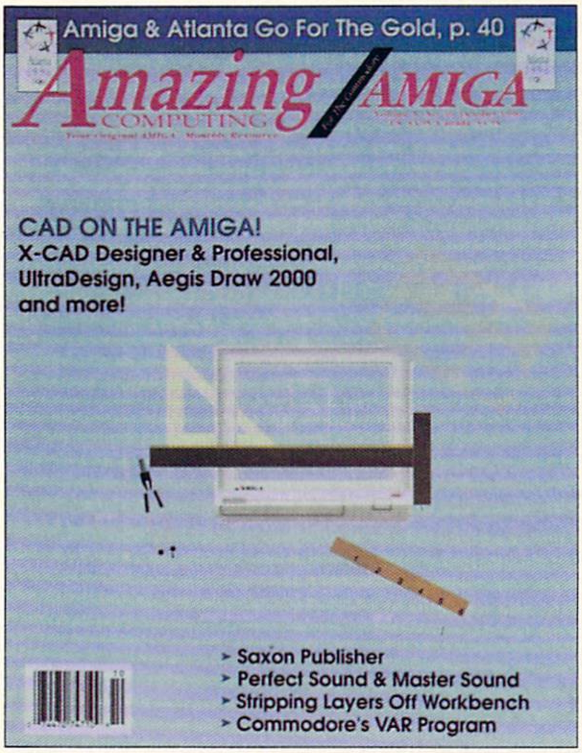
Note the console options in the "newcli" command: /bdms. If you do not have ConMan, you should omit this. "b" makes the console a backdrop window (it always stays behind other windows), "d" says no depth arrangement gadgets, "m" says the window is immovable, and "s" says the window should have no sizing gadget.

Now, after all this, what happens when you have a power failure? At most, you have lost 15 minutes of work. You can then startup your machine and copy the files up from the "backup:" disk to vd0:. If you avoid clearing your "backup:", you always have the most recent versions of your program source and object on backup. Or, you can periodically clear the disk, so that only the most recent checkpoint is available.

•AC•

re: AC's CAD coverage

The following letter was submitted to our editorial offices in response to Mr. Douglas Bullard's coverage of Amiga CAD packages appearing in our October issue:


Amiga & Atlanta Go For The Gold, p. 40
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AMIGA
CAD ON THE AMIGA!
X-CAD Designer & Professional, UltraDesign, Aegis Draw 2000 and more!
Saxon Publisher
Perfect Sound & Master Sound
Stripping Layers Off Workbench
Commodore's VAR Program

Dear Editor,

I am writing you to correct a few errors and omissions in your CAD review *[October 1990, V5.10, p.42]*.

First, this is not the 'CAD On The Amiga' review of X-CAD, Aegis Draw 2000, UltraDesign and IntroCAD. This is a review of X-CAD with sidebars about its competition! In total bulk, by my count X-CAD scored nine pages, all the others had two pages apiece.

Concerning copy protection, an issue which is often very hotly debated in the Amiga market, you gingerly note that X-CAD is dongle protected, with the words "A dongle is a reasonable method of copy protection..." You then proceed to totally skip over the issue that Aegis Draw 2000, IntroCAD, and UltraDesign are all TOTALLY FREE OF ANY SORT OF COPY PROTECTION. Many of our customers feel that this is very important, and I feel you should have noted this.

On page 54, second column, third paragraph, you insert a short explanation of the differences between Integer and Floating Point math, with their respective advantages and disadvantages. You state that "Floating-point programs have roundoff errors which accumulate when scaling or moving objects." I believe you were referring to Integer programs (such as X-CAD) and not Floating-point programs as you stated.

On page 50, center column, first paragraph, you state that "Registered users must contact the manufacturer (PP&S) for a 68020/30 version of the program if they want to speed things up with their '030 boards." This is not true. On the UltraDesign registration card, there is a box to mark to order the Floating-point coprocessor version of UltraDesign when you register.

On the same page, third column, second paragraph, you criticize UltraDesign for not having the plot function built into it. We find that since raster printing at high-density consumes tremendous amounts of memory, it was much more effective to allow the users to plot or print their drawings without all the unnecessary bulk of UltraDesign itself occupying memory that could be used to speed up the printing process. If it is really "a pain" as you say, to load PasteUp when you want to plot, you could add a menu to UltraDesign to call an ARexx "address command 'PasteUp' " script.

Also, contrary to what you say on page 51, left column, first paragraph, "One apparent drawback—you cannot plot only a part of a drawing, such as a section view," you can selectively plot any rectangular section of the drawing by resizing the output page and repositioning the drawing such that only the desired area falls onto the page.

The following are several aspects that you covered in detail in X-CAD, but did not adequately cover in UltraDesign.

Menus: UltraDesign supports fully user-configurable Intuition style menus. The user can remove exiting menus, add menu items to call scripts and ARexx programs, and totally restructure the menu interface. Every menu item can also be given a unique keyboard abbreviation for fast hot-key access.

(continued on page 82)

(Modems, continued from page 47)

work Protocol) Level 5 Protocol. (The modem actually supports MNP Levels 2 through 5.) The MNP Level 5 protocol is a hardware-implemented protocol which boasts 100% error-free transfers as well as a double transfer rate (4800 baud) implemented through data compression, the catch being that you need a MNP Level 5-compatible modem on the other end of the connection.

The advantage of the Baud Bandit MNP is that, unlike software error-checking protocols (XModem, YModem, etc.), built-in protocols require no action from the user. When the two modems connect, they determine the highest level of error-correction available, and will then make use of it automatically. This is really plug-and-go power! You don't have to use any special commands to access the MNP power, although there is a suite of new commands for that POWER modem user. This means that even no-protocol transfers (text file captures, data entered, and screen updates) will be handled without error. No more garbage characters due to a noisy phone line.

The Baud Bandit MNP ranks high in the compatibility arena. The modem is Hayes-compatible and includes an extended MNP Level 5 Plus command set which includes over 40 extra commands. The modem is also compatible with Bell 103/212A, CCITT V.22, and CCITT V.22bis protocols.

The Baud Bandit MNP comes with the best modem manual I have ever seen, telephone cable, a power adapter, and a full one-year warranty. You'll need two more things before you're ready to go on-line: a serial cable and a communications package. The Baud Bandit MNP is truly an impressive modem.

Final Words

Who needs built-in data compression or error control? If you routinely transmit large files, built-in data compression could save you considerable money over time. If you send critical information that must be error-free, maybe a modem with built-in error control is for you. On the other hand, if your main telecommunications activity is swapping a few files with the local BBS, or browsing through the more popular information services, you probably don't need a modem with error control or data compression. Shop wisely!

•AC•

Baud Bandit: $169.95
Baud Bandit MNP/Level 5 Plus: $199.95
Progressive Peripherals & Software, Inc.
464 Kalamath Street
Denver, CO 80204
(303) 825-4144
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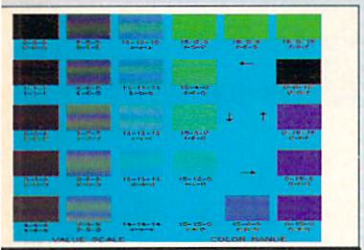

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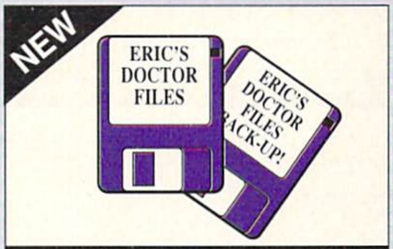

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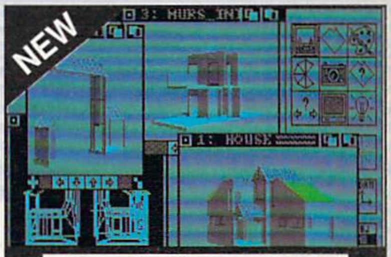

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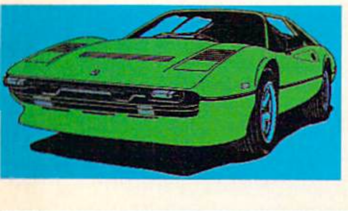

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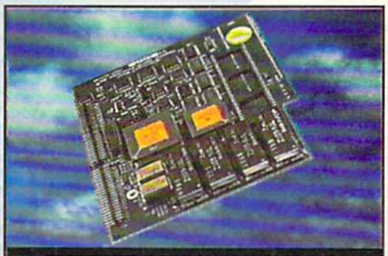

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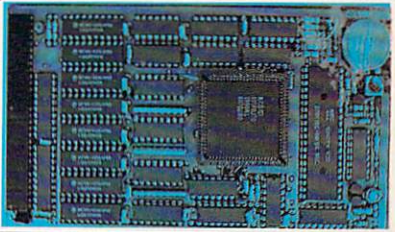

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(CAD, continued from page 79)

Printing/Plotting: You detail X-CAD Professional's ability to output to a plotter (HPGL presumably), and X-CAD Designer's support of Epson-only printers. UltraDesign's PasteUp utility will output to HPGL, DMPL, and DXY plotters, PostScript printers, Encapsulated PostScript Files (EPSF), and any printer for which you have an Amiga printer driver. Such excellent CAD-oriented but non-Epson-compatible printers as the HP Paintjet, the ImageWriter II, and the Xerox 4020.

Hatching: UltraDesign allows you to edit crosshatching after it is drawn, just like you describe X-CAD capable of on page 47, column 1, second paragraph. In addition, UltraDesign allows the user to create totally new hatching patterns.

Also, you failed to mention UltraDesign's ARexx port and ARexx compatible script language. This is one of the most powerful functions of the program. With this, you can create ARexx sub-programs that control UltraDesign. The uses of this are many: Converting USGS digital map data into CAD drawings, A flowchart generator program that uses UltraDesign to draw flowcharts, Simple time-saving macros to execute repetitive operations, etc.

Sincerely,
Chris Hanson
Technical Support
Progressive Peripherals & Software
(Publishers of IntroCAD and UltraDesign)

P.S. We will overlook your calling UltraDesign "UltraCAD" on page 52, third column, third paragraph.

While I did not explicitly mention that Aegis Draw 2000 or UltraDesign were not copy protected, I did state that they were transferred to my hard drive without problems. I did, however, explicitly state in the second paragraph of the IntroCAD Plus review that it was not copy protected. I stated that your products were the easiest to transfer to the hard drives of all the products reviewed, which implies that they are not copy protected.

My comments for the printing process still stand. I may be more efficient in terms of memory usage to exit the program to print, but I still find it cumbersome. Imagine having to exit a word processing program every time you wanted to print a file! I was in error when I stated that it is impossible to plot a selected part of a drawing.

I also failed to mention UltraDesign's ability to edit or create custom cross hatching, or its powerful ARexx-compatible scripting language.

As for my accidentally calling UltraDesign 'UltraCAD', that was indeed my error, as I did not even intend to mention two packages in that statement. It should have written 'IntroCAD is your best bet' and omitted the 'UltraCAD'. —Doug Bullard

Corrections

In our September 1990 issue (V 5.9), a portion of the code in the "Sculpt Script Tutorial" article, by Christian Aubert, was accidently omitted. On page 27 the second column of code reads:

```
ERASE SELECTED VERTICES

WINDOW WEST
(52,11,120) - (52,11,160)-(52,14,160) - (52,14,165) (52,-14, 165)
 (52,-14,160)-(52,-11,160)-(52,-11,120)
 ELECT CONNECTED
 52,0,120)
 PIN 16 360
 ELECT CONNECTED
 AME SELECTED VERTICES "REEL1"

ADD DUPLICATE
GRABBER ON
```

This should read:

```
ERASE SELECTED VERTICES

WINDOW WEST
(52,11,120) - (52,11,160)-(52,14,160) - (52,14,165) (52,-14, 165)
-(52,-14,160)-(52,-11,160)-(52,-11,120)
SELECT CONNECTED
(52,0,120)
SPIN 16 360
SELECT CONNECTED
NAME SELECTED VERTICES "REEL1"

ADD DUPLICATE
GRABBER ON
```

Also in the September issue (V5.9), Mr. Duncan Thomson, author of the CygCC ARexx program presented, reports that a change in the code is required as a result of new releases of the ARexx interpreter and CygnusEd editor which have appeared since the program was written. To make the program work correctly with the current versions of the ARexx interpreter (V1.10) and the CygnusEd editor (CygnusEd Professional 2), in the module NextErr (Listing 4) the line:

```
if result ~ = = 'RESULT' then do
```

Should be changed to read:

```
if ~ result then do
```

We apologize for any inconvenience these omissions and changes may have caused.

Fourth in a series of Assembly 68000 programming tutorials

KEYBOARD INPUT IN ASSEMBLY

by Jeff Glatt

IF YOU'VE BEEN FOLLOWING THIS SERIES OF ASSEMBLY articles which began in AC V3.12 (Dec. '88), you should already know how to program the following:

1) Open and close Windows and Libraries
2) Print text and change window colors
3) Draw into a window
4) Set up an IDCMP loop
5) Use of the mouse, menus, and gadgets

The code presented in that first article demonstrated IDCMP and menus, with do-nothing handlers for other Intuition events. In subsequent articles (AC V4.10 and V5.4), we replaced those rts instructions with actual, useful example code. In this article, we will replace the dummy rawkey handler.

If you ask for RAWKEY messages by specifying that bit in your new Window structure (see V3.12), then Intuition sends a RAWKEY message every time the user presses a key, releases a key, or holds a key down beyond a specified period (set by the Preferences key repeat rate).

The Code field of that message contains the RAWKEY code for that key. On page 292 of the RKM "Libraries and Devices" there is a chart that shows the keycodes for all keys on an Amiga 1000 (this chart also appears in the hardware manual on page 239 and the AmigaDOS manual on page 227). The Amiga 500 and 2000 have extra keys, and a revised chart can be found in the literature accompanying those computers.

If you examine this chart, you'll note that there is a hex 45 where the ESC key is situated. This means that when the user presses down the ESC key, Intuition sends a message with the Class field = $00000400 (for RAWKEY) and the Code field = $0045.

When a key is released, Intuition adds $80 to the keycode and sends another message. So, when the user releases the ESC key, Intuition sends another message with Class = $00000400 and Code = $00C5.

The Class field is always = $00000400 for a RAWKEY keyboard event.

Additionally, the Qualifier field of the message holds information about whether the user was holding down the Ctrl, Shift, Alt, or Amiga keys when he pressed that ESC key. The qualifier is a WORD with each of the 16 bits set for a given condition as follows:

BIT	CONDITION
0	Left Shift down
1	right Shift down
2	Caps Lock on
3	Ctrl key down
4	left Alt down
5	right Alt down
6	left Amiga down
7	right Amiga down
8	this key is on numeric pad
9	this key was held beyond the key repeat time-out
10	not used
11	multi broadcast
12	left mouse button down
13	right mouse button down
14	middle mouse button down
15	mouse coordinates relative

Let's say that the user presses the Ctrl key. First, Intuition is going to send a message with the Code field = $63 for that Ctrl key being pressed down. Next, let's assume the user continues holding the Ctrl and presses the left Alt key. Now, Intuition sends another message with the code = $64. The qualifier field of this message will have bit #3 set, because the user was holding down the Ctrl key when he pressed the left Alt. Next, the user continues holding these 2 keys and presses the Enter key on the numeric keypad. Now, Intuition sends a message with the code = $43. The qualifier will have bits 3 and 4 set, because both the Ctrl and Left Alt were being held when the user pressed Enter, and bit 8 will also be set because Enter is on the numeric keypad. See how this works?

If the user continues holding these keys down, eventually Intuition will send another message after a time-out period (as determined by the key repeat rate of Preferences). The user has not done anything except to continue holding the keys down. The code field will be $43, and the qualifier will have bits 3, 4, and 8 set as well as bit 9 set to indicate that this is a key repeat. As the user continues holding the keys, another identical message is sent after each time-out period.

Eventually, the user begins releasing the keys, and each one (i.e., the Ctrl, Enter, and Alt) generates a message with $80 added to the code. For example, as the user releases the left Alt key, Intuition will send a message with code = $E4.

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We now know what RAWKEY codes to expect, depending upon what the user does. Unfortunately, if we want to print out certain keys that the user presses, we need to convert the RAWKEY keycode to an ASCII value. ASCII is a numeric code in which alphabetic characters and certain symbols are assigned distinct values. ASCII values range from $00 to $FF. For example, the ASCII value for the # key is $23. Note that the RAWKEY value for the # key is $03. There is no ASCII value for a key that has no printable symbol associated with it. Such keys are the function, cursor, help, Alt, Shift, Ctrl, and Amiga keys. Furthermore, although there are different ASCII codes for upper and lower case letters, ASCII cannot deferentiate between pressed or released keys. Such information can only be obtained from RAWKEY codes and qualifier bits.

The graphics library Text() routine requires that we translate all chars from RAWKEY to ASCII codes. Well, we could say that if we receive a RAWKEY Code = $0010 then this is a "Q", because that is what is shown on the RKM chart. Unfortunately, this applies to only keyboards sold in English-speaking countries. In a foreign country, an Amiga keyboard might not have a "Q" printed on the keycap associated with RAWKEY code $10. The "Q" may be elsewhere. In fact, there may not be a "Q" on the keyboard anywhere. We better not assume that RAWKEY $10 equals ASCII $71 (q).

There is an easy way to get the proper ASCII codes. Instead of specifying RAWKEY messages, we can ask Intuition for VANILLAKEY messages. In this case, the Code field is the actual ASCII value for the key pressed, rather than the RAWKEY value. Unfortunately, because there is no ASCII value for the function, cursor, help, etc. keys, Intuition will not send any messages when the user presses or releases those keys. What good is that?

The console device is the part of the Amiga operating system that translates RAWKEY to ASCII, taking various foreign "keymaps" into consideration. We can send the RAWKEY code and qualifier to the console device, and it will translate the proper ASCII code (just like Intuition VANILLAKEYS). The good news is that the console device sends information about all of those non-printable keys. The bad news is that when the user presses a function key, the console device spews out an entire stream of bytes which have to be recognized as the "code sequence" for that function key. Not too appetizing.

The code field of an Intuition message is a WORD, and ASCII values only go up to $FF. Why can't we extend the ASCII range out to $FFFF and use some of those undefined values to represent the function, cursor, etc. keys? Wouldn't it have been nice if CBM did that with VANILLAKEY? Well, they didn't. The C programmers who wrote Intuition would have had casting nightmares (much like a low-budget Hollywood movie) with UCHAR to USHORT. They like INT. By the way, INT stands for "Intentionally Nebulous Term". Programmers on other platforms use INT to facilitate porting their products to the Amiga, even though that almost never happens. So, I'm going to show you how to translate all of the Amiga RAWKEY codes into proper ASCII values, with the following goals:

1) For printable ASCII codes, I am going to supply a translation routine that isolates you from having to deal with the console device directly.

2) Function, cursor, and help keys are given ASCII values > $FF. The actual value depends upon whether the user is also holding down the Shift, Alt, Ctrl, or Amiga keys as well.

For plain function keys (1 to 10, respectively) the values are $0100 to $0109.

For plain cursor Up, Down, Right, and Left the values are $010A to $010D.

For the plain Help key, the value is $010E.

If either Shift key is held, the values are as above with bit #9 also set. So the functions keys are $0300 to $0309.

For the shifted cursor Up, Down, Right, and Left, values are $030A to $030D Shifted Help is $030E. With either Alt key held, bit #10 is set. With either Amiga key held, bit #11 is set. With the Ctrl key held, bit #12 is set. Note that the low byte of the WORD for the function keys is always $00 to $09, the cursor keys are $0A to $0D, and the help is $0E. In essence, the high byte is the qualifier bits. The resulting WORD is always > $FF, so that this routine will return printable ASCII values < = $FF and any non-printable keys as > $FF. This greatly simplifies distinguishing between the two. Also, printable keys are translated into proper ASCII values.

For our purposes, we do not want to know when the user presses the Ctrl, Shift, Alt, or Amiga keys. We only want to know if these are being held down when the user presses any other key. We also do not care about key release messages, since we do not have anything to do when the user releases the key.

The routine DecodeRawkey addresses all of these considerations; it is passed the Code and Qualifier fields of a received RAWKEY Intuition message. Since the Ctrl, Shift, Alt, and AMIGA keys have RAWKEY codes > $60 as do all key release events, we ignore these by returning a 0. At label DR1, we test for this condition.

At label DR2, we check to determine whether the event is a function, cursor, or help key. All of these have Codes > $4C. By subtracting $4C, we also adjust the code from 0 if it happens to be one of these non-printable keys. Let's assume so in this case. At label DR3, we look up the address of the low byte of our returned WORD. We are simply translating function keys to values from $00 to $09, cursor keys from $0A to $0D, and help key as $0E. At DR4, we initially set bit #8 of our return WORD, to force it > $FF. At DR5, we check for either Shift key being held down by examining bits 0 and 1 of the Qualifier. If either is set, then we set bit #9 of the return WORD. At labels DR6, DR7, and DR8, we check for Alt, Ctrl, and Amiga keys respectively, setting bits #10, 11, and 12 accordingly. At label DR9, we fetch the low byte, and return this WORD. It will be > $FF, with bits 9, 10, 11, and 12 set for appropriate qualifiers.

If the key was not a function, cursor, or help, then it must be a defined ASCII code. We're going to use the console device to translate this event into a single ASCII byte. The console device is also an Amiga library with a function called RawKeyConvert which we are going to use. In order to do this, we need the base address of the console device. You get the console device base by opening it, and extracting the Device field of the IOBlock used to open the device. An IOBlock is defined on page A-24 of the Exec ROM Kernal Manual in the "exec_io.i" listing. We are actually using a Standard IO request extension (we'll learn more about them later when we deal with devices).

Here is the code required to get that address. We only need to execute this once, so add this code in the open_libs function of the original article (AC V3.12) at label B2. This is before we get our task address.

```
   XREF  _LVOOpenDevice,_LVOCloseDevice

;=======Get the console device base=========
B2 ;-Zero out a 56 byte IOBlock
   ;   while we allocate it on the
   ;   stack. Note how 1 clear a
   ;   LONG at a time for a total
   ;   of 56 bytes
GC1   moveq     #14-1,d0
clrio clr.l     -(sp)
      dbra      d0,clrio
   ;-Use this IOB to open
   ;   the Console Device.
GC2   movea.l  sp,a1     ;our IOB base
      moveq    #-1,d0    ;means "no window"
      moveq    #0,d1
      lea      ConsoleName,a0
                         ;_SysBase is in a6
      jsr      _LVOOpenDevice(a6)
GC3   move.l   d0,d1
      bne.s    GC5
   ;-Get the Console Device
   ;   base address from our
   ;   IOB and close device
GC4   movea.l  sp,a1
      move.l   20(a1),_ConsoleBase
      jsr      _LVOCloseDevice(a6)
   ;-get rid of our IOB
GC5   adda.w   #56,sp
```

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At label GC1, we are going to allocate 56 bytes of space on the stack for an IOBlock and zero it out at the same time. At GC2, we place the IOBlock address in a1 and open the console device. Note that placing a -1 in d0 tells the console device not to attach a console to any window. Essentially, we are opening it in "library mode" only. The return from OpenDevice will be non-zero for an error. Since the console device is in KickStart ROM and is opened by AmigaDOS upon boot-up, it should always open. At label GC4, we get the console device base from the IOBlock's device field. After you open a device, an IOBlock's Device field is the base address of the opened device. Finally, at GC5 we read just the stack to get rid of our IOBlock. Normally, we would never close a device until after we are done using it, but since the console device is always kept open by the Amiga operating system, this is acceptable.

Now, for printable keys in DecodeRawkey, we execute code at label RegKey. First, we need to allocate and initialize a 22-byte InputEvent structure which is required by the console device's RawKeyConvert(). We obtain this structure on the stack in the same manner as our IOBlock. An InputEvent is described in the Libraries and Devices RKM on page D-32. We need to set them InputEvent's class field = RAWKEY (bit #0 set) and store our RAWKEY Code and Qualifier in its respective code and qualifier fields. This is done at label DR10. At DR11, we place our InputEvent address in a0 for RawKeyConvert. At label DR12, we allocate a 2-byte buffer on the stack. This is where RawKeyConvert will place our translated ASCII byte. A 1 in d1 means that we only want 1 ASCII byte back, and zeroing a2 tells the console device to use whatever keymap the user set for his system. At DR13, we check that we only received 1 byte back. If d0 is not 1, then for some reason this key translated to a stream of bytes. We'll return zero for this case because we only want keys that translate to a single ASCII byte (character). If all went well, at DR14 we remove our ASCII value from the buffer. It will be some value < $FF. At keyno, we read just the stack for both our buffer and InputEvent.

Now, we need to write the routine which replaces our dummy rawkey handler. This routine will use DecodeRawkey to translate the RAWKEY event to our extended ASCII spec. Then, we'll print out the single char if it's a printable ASCII value (less than $FF). If it's a function, cursor, or help key (greater than $FF), we'll analyze the value and look up strings which describe what the event is (i.e., maybe a Shifted Cursor Up key). We'll print out this description instead. The function, rawkey(), does this.

At RK1, we call DecodeRawkey. If this returns a zero (z-flag set), then we exit, as it must be a key release, or a lone qualifier. Otherwise, at label RK2, we clear the area where we intend to print the char(s). At RK4, I check to see if the event is a function, cursor, or help key. Remember, anything > $FF is that. If not, at RK5, I store the returned printable ASCII byte and print it out.

For a cursor, function, or help key, we go to RK6. First, I see if any qualifier was held down, and print out a string describing it. Then, at RK8 I look up a string that describes what the key was, and print out this string.

Combine this article's code with the code from the other articles. Assemble the combined source. If using an ALink-compatible assembler such as BLink:

1> BLink startup.o Program.o small.lib nodebug to ram:Test where startup.o is any standard startup code (available from CBM or Fred Fish #55) where small.lib is Bryce Nesbitt's version of Amiga.lib (from CBM or Fred Fish #92) where Program.o is the assembled source code from these articles. The resulting program is ram:Test

Try pressing any key on the Amiga keyboard. Note that printable ASCII values get displayed as such. For example, press the 1 key, and you should see a 1. Now, hold down the shift and press 1 again. Did you see an exclamation mark? Also, hold down the Alt key and press 1. Did you see a special ASCII char?

Now press the first function key. Did you see the phrase "Plain F1"? Hold down the Ctrl key and press F1. Did you see the phrase "Ctrl F1"? Experiment holding down other qualifiers (Shift, Alt, and Amiga keys) and press various other keys including the cursor keys and the help key.

An interesting situation arises when you hold down one of the Amiga keys while pressing a cursor key—hold the left Amiga key and press the Up cursor key. Instead of seeing "Amiga Up" printed out as you might expect, the mouse pointer moves up. This is because Intuition automatically grabs these cursor RAWKEY events and uses them to move the mouse. My program never even gets messages for cursor events while either Amiga key is held down. This just proves that even the authors of the Amiga operating system had a sense of humor.

You can use the code that opens the console device and DecodeRawkey in any program which needs to handle user keyboard input. Just write a suitable rawkey handler which calls DecodeRawkey, as demonstrated here.

If you have followed this series of articles, you now know how to write user-friendly, "Amiga-tized" programs for a great many applications. Our next mission: to look at disk input/output via AmigaDOS.

LISTING: RAWKEY handler

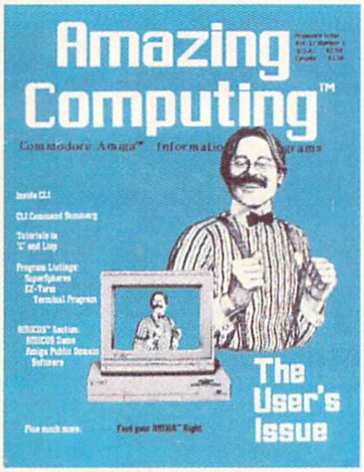
```
;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
; Handles a RAWKEY event.
; Passed the Code in d5, Qualifier in d4
rawkey:
;-convert RawKey into an ascii WORD
RK1 move.w   d4,d0          ;Qualifier
    movea.w  d5,a1          ;Code
    bsr      DecodeRawkey
    bne.s    RK2
    rts
;-clear where the ascii is printed
RK2 move.w   d0,d5         ;save ascii
    moveq    #127,d0
    moveq    #20,d1
    movea.l  RastPort,a1
    movea.l  _GfxBase,a6
    jsr      _LVOMove(a6)
    lea      Spaces,a0
    moveq    #16,d0
    movea.l  RastPort,a1
    jsr      _LVOText(a6)
;-Move back to print start
RK3 moveq    #127,d0
    moveq    #20,d1
    movea.l  RastPort,a1
    jsr      _LVOMove(a6)
;-Did we get a Function, Cursor
;   or Help key?
RK4 cmpi.w   #$0100,d5
    bcc.s    RK6
;-Print out plain ascii byte
RK5 lea      asciiBuffer,a0
    move.b   d5,(a0)        ;store it
    moveq    #1,d0          ;print 1
    movea.l  RastPort,a1
    jmp      _LVOText(a6)

;======== SPECIAL KEYS ========
;-Print the qualifier type
RK6 lea      SHIFTmsg,a0
    btst.l  #9,d5
    bne.s   RK7
    lea     ALTmsg,a0
    btst.l  #10,d5
    bne.s   RK7
    lea     AMIGAmsg,a0
    btst.l  #11,d5
    bne.s   RK7
    lea     CTRLmsg,a0
    btst.l  #12,d5
    bne.s   RK7
    lea     PLAINmsg,a0
RK7 moveq   #6,d0
    movea.l RastPort,a1
    jsr     _LVOText(a6)
;-Lookup/Print the key "name"
RK8 moveq   #0,d0
    move.b  d5,d0     ;only low byte
    lsl.w   #2,d0     ;x 4
    lea     SpecialMsgs,a0
    adda.l  d0,a0
    movea.l (a0),a0
    moveq   #5,d0
    movea.l RastPort,a1
    jmp     _LVOText(a6)

;==================================================================
; This decodes the passed Rawkey Code (a1) and Qualifier (d0) fields.
; Returns d0 = 0 if Code >= $60 or undefined. If Code is less, returns
; d0 = the decoded ascii value. Z-flag set accordingly.
;
; Function keys return $100-$109, cursor keys are $10a-$10d
; Help key returns $10e. If shifted, values are $200-$209,
; $20a-$20d, and $20e. For Alt, values are $400-$409,
; $40a-$40d, and $40e. With Amiga key, $800-$809, etc.

      XREF  _LVORawKeyConvert
      XDEF  DecodeRawkey
DecodeRawkey:
;return 0 if code >= $60 (This excludes the caps
;lock, shift, alt, ctrl, Amiga, and key release)
DR1   moveq    #$60,d1
      sub.w    a1,d1
      bls.s    NoKey
;-Check for a function/arrow/help key press
DR2   move.w   a1,d1    ;rawkey code
      subi.b   #$4C,d1
      bcs.s    RegKey
;-Get our own ascii code for these
;   Lookup the low byte
DR3   add.b    d1,d1
      lea      ExtraKeys,a1
      adda.w   d1,a1
      move.l   d2,-(sp)
DR4   moveq    #0,d1
      bset.l   #8,d1    ;plain key
   ;-Check for Shift keys
DR5   moveq    #3,d2
      and.b    d0,d2
      beq.s    DR6
      bset.l   #9,d1    ;set Shift bit
   ;-Check for Alt keys
```

(continued on page 94)



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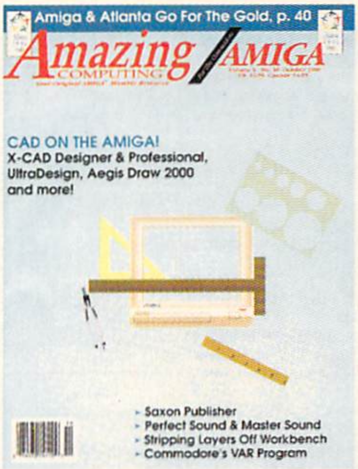
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"View From the Inside: Bars&Pipes", Bars&Pipes designer gives a tour of Blue Ribbon Bakery's music program, by Melissa Jordan Grey
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"Trees and Recursion", by Forest W. Arnold
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"Resizing the shell/CLI Window", by William A. Jones
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"Be A VAR!", With Commodore's new Value Added Resaler program, creating specialized Amiga applications could make you a VAR.
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"Audio Illusion", Produce fascinating auditory illusions on your Amiga, by Craig Zupke
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"Snapshot", Journey through NYC with the Teenage Mutant Ninja Turtles and more, by R. Brad Andrews
"PD Serendipity", A look at SID V1.06 a directory utility for the Amiga, by Aimée Abren
"Bug Bytes", Upgrades this month include: F-BASIC 3.0, ProWrite 3.1, and shareware program GeoTime 1.2, by John Steiner
"Roomers ", Will those people who bought an Agnus upgrade for their A2000 have to buy it again to get the new Denise chip?, by The Bandito
"C Notes from the C Group", A program that examines an archive file and removes any files that have been extracted, by Stephen Kemp

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(Snapshot, continued from page 25)

Xenon 2 is nearly pure shoot-em-up. Though the story has the standard allusions to saving the universe, the basic goal is to survive through several different alien landscapes.

The game is played on a vertical scrolling field, your mission being basically to shoot anything that moves. As with most games of this genre, shooting some objects produces valuable "pills" which can be picked up, thus benefiting your ship in some way. Also, shooting complete groups of aliens produces credit markers which, if gathered during the brief time they remain on screen, can be used to purchase various additional options for your ship at the trading post midway through each level.

The graphics in Xenon 2 are sharp, but not quite up to the standard of some of the better arcade games. Motion is smooth, and the sounds are well done.

The second half of the two-pack is Bombuzal. This game, while it does have arcade elements, requires much more strategy than Xenon 2. You must clear level after level of the many bombs scattered about. While this may sound easy, it is not. When bombs explode, they destroy everything within their blast radius. Obviously, this will prove fatal to you if you are within this danger zone. And since you must be on a bomb in order to set it off, the only way to destroy the larger bombs is to ignite them via chain reaction from a smaller bomb.

Several hundred different levels are included, and it takes quite a while to work through them all. Many different tile types are used in the levels to add a variety of challenges. From teleportation tiles, to switches that add or remove bombs, to indestructible squares, the layout of each level and the makeup of its tiles will determine what strategy you must employ to clear the level. Oh, I forgot to mention one thing—all this is done with the clock running. And since there is no pause button, you must figure things out while on the run. The game can be played with either an overhead (called 2-D, though it is really pseudo three-dimensional) or an offset view (called 3-D).

Product Information

Tunnels of Armageddon
California Dreams
780 Montague Expressway #403
San Jose, CA 95131
(408) 378-0340
Price: $39.95
Inquiry #206

Double Dribble
Konami, Inc.
900 Deerfield Parkway
Buffalo Grove, IL 60089-4510
(708) 215-5100
Price: $39.95
Inquiry #207

Blades of Steel
Konami, Inc.
900 Deerfield Parkway
Buffalo Grove, IL 60089-4510
(708) 215-5100
Price: $29.95
Inquiry #208

Space Rogue
Origin Systems, Inc.
P.O. Box 161750
Austin, TX 78716
(512) 328-0282
Price: $49.95
Inquiry #209

Pictionary
Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(800) 521-6263
Price: $39.95
Inquiry #210

BrainBlaster
Spotlight Software/dist. by
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(800) 245-4525
Price: $39.95
Inquiry #211

Unreal
UBI Soft/dist. by Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(800) 245-4525
Price: $49.95
Inquiry #212

The basic sounds in the game—the explosions—are quite realistic. While some levels can be very frustrating until you learn their secret, most can be cleared with a good dose of patience and brain-bending. The game's only shortcoming is that the controls can sometimes be a bit touchy: it is sometimes very easy to kill your on-screen character by accidently stepping into open space because of a false move. But this is at least bearable since the game offers a restart feature which allows you to begin at the same level that stumped you.

Bombuzal is definitely one of the best this month. While I did get frustrated every so often, with a little perseverance and thought I was able to solve any level put before me. And even after many hours of play, many levels are left.

UNREAL

Finally this month I want take a look at the game Unreal, a new release from European UBI Soft. Once again, you must face hordes of evil creatures to rescue your beloved from the most wicked being on the planet. Your travels take you through two different types of battle. Some segments are flown airborne, on the back of your dragon friend and into the screen. But your dragon only has a limited amount of strength; therefore, you must complete some segments on foot. These use a side-view perspective. During the flying sequences, you can use the dragon's breath to clear many obstacles out of the way, as well as pick up a variety of crystals to replenish your strength and add to your power. While on the ground, your sword is your only protection, though revitalizing crystals are also available there.

While the graphics and sound are OK, the game is not overly impressive. Control is rather jerky, making accidental death very easy in many sections. In fact, a slightly misjudged jump on the ground section can cause you to lose an entire life immediately—very annoying. Both the airborne and on-ground sections are substandard to what could have been done.

•AC•

The Fred Fish Collection

The Fred Fish disks are collected by Mr. Fred Fish, a good and active friend of the Amiga.

Due to the increasing size of the Fred Fish Collection, only the latest disks are represented here. For a complete list of all AC, AMICUS, and Fred Fish Disks, cataloged and cross-referenced for your convenience, please consult the current *AC's Guide To The Commodore Amiga* available at your local Amazing Dealer.

Fred Fish Disk 335

BoingDemo	Demo version of a neat game due for release in March 1990. It is fully functional but the play time is limited to five minutes per play. Version 0.30, binary only. Author: Kevin Kelm, Alternate Realities
DTC	A utility providing a simple calendar which can hold and show appointments. It may be useful in managing your time. Its chief goals were to provide day, week and month at a glance for any date between 1/1/0001 and 12/31/9999, defaulting to the current date. It is menu driven and fairly easy to use. Includes source in Fortran. Author: Mitch Wyle, Amiga port by Glenn Everhart
SeeHear	A program to do a spectrogram of a sampled sound file. This is a graph with time on one axis, frequency on the other and the sound intensity at each point determining the pixel color. With source in C, including FFT routine. This is version 1.1. Author: Daniel T. Johnson

Fred Fish Disk 336

Car	A two-dimensional full screen scrolling racing game with realistic four channel stereo sound and overscan, for either NTSC or PAL Amigas. The goal is to guide your car around one of ten selected tracks. Each track has its individual high score list. Version 2.0, binary only. Author: Anders Bjerin
FileWindow	A completely public domain file requester which may be used in any program, even commercial ones. It uses dynamically allocated memory to hold the file names so the only limitation is the amount of memory available. Includes a filter option to limit display of filenames to only ones with a specific extension. Names are automatically sorted while they are being read and displayed. V1.10, includes source. By: Anders Bjerin
MiniBlast	A shoot'em up game which runs just fine in a multitasking environment. At last you can enjoy a satisfying megablast while you are writing a boring essay. Shoot anything that moves, and if it doesn't move, shoot it anyway. V1.00, binary only. By: Anders Bjerin
Sys	A game built on the addictive game PONGO but with several added features. You have been assigned the demanding task of cleaning viruses from your SYSOP's hard disk. To kill a virus, you simply kick a disk at it. There are fifty different levels, and on each level, the speed will increase and the viruses will be smarter and start to hunt you. V2.10, binary only. By: Anders Bjerin

Fred Fish Disk 337

CManual	A complete C manual for the Amiga which describes how to open and work with screens, windows, graphics, gadgets, requesters, alerts, menus, IDCMP, sprites, etc. The manual consists of more than 200 pages in 11 chapters, together with more than 70 fully executable examples with source code. When unpacked, the manual and examples nearly fill up three standard Amiga floppies. This is version 1.00 and includes source for all examples. Author: Anders Bjerin

Fred Fish Disk 338

Cpp	This is a copy of the Decus cpp, ported to the Amiga. This cpp is more powerful and complete than either of the built in cpp's in Manx or Lattice C. This is an update to the version on disk 28. It has had some ANSI features added. Includes source. By: Martin Minow, Olaf Seibert
SASTools	Various submissions from "Sick Amiga Soft". Includes some virus tools, some screen hacks, some small games, and miscellaneous utilities. Includes source in assembly and Modula-II. Author: Jorg Sixt
SID	A very comprehensive directory utility for the Amiga that supports at least a couple of dozen different commands for operating on files. Version 1.06, binary only. Author: Timm Martin

Fred Fish Disk 339

PCQ	A freely redistributable, self compiling, Pascal compiler for the Amiga. The only major feature of Pascal that is not implemented is sets. This is version 1.1c, an update to version 1.0 on disk 183. It is much enhanced and about four times faster. Includes the compiler source and example programs. Author: Patrick Quaid

Fred Fish Disk 340

NorthC	A complete freely redistributable C environment for the Amiga based on the Sozobon Ltd C compiler, Charlie Gibb's assembler, the Software Distillery's linker, and portions from other sources. Steve has pulled everything together and added some enhancements in the process. Version 1.0, partial source only. By: Steve Hawtin, et. al.
Plplot	A library of C functions useful for scientific plotting on the Amiga. The library is Lattice C compatible. Contour plotting, three dimensional plotting, axis redefinition, log-log plotting and multiple subpages are a few of Plplot's features. The plots can be displayed on a monitor or sent to a graphics file for subsequent printing. This is version 2.6, and update to version 1.00 on FF222. This version includes a greatly improved intuition interface, preferences support for hardcopy, several new device drivers, and the capability of adding additional device drivers easily. Includes source. Author: Tony Richardson
SpeakerSim	Demo version of SpeakerSim 2.0, a loudspeaker CAD program. Simulates vented (Thiele-Small) and closed box systems. Also simulates 1st, 2nd, and 3rd order high and low pass filters. Binary only. By: Dissidents

Fred Fish Disk 341

P2C	P2C is a tool for translating Pascal programs into C. It handles the following Pascal dialects: HP Pascal, Turbo/UCSD Pascal, DEC VAX Pascal, Oregon Software Pascal/2, Macintosh Programmer's Workshop Pascal, Sun/Berkeley Pascal. Modula-2 syntax is also supported. Most reasonable Pascal programs are converted into fully functional C which will compile and run with no further modifications. V1.13 Includes source. Author: Dave Gillespie, Amiga port by G. R. (Fred) Walter

Fred Fish Disk 342

IE	This is an icon editor which can create and modify icons up to 640x200 pixels in size (also dual render). It can set stack size, position of icon (also free-floating), default tool, 10 tool types and control over opened window. It can also generate the C source code behind the icon for program inclusion. Version 1.0, binary only, source available from author. Author: Peter Kiem
SKsh	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. Version 1.4, an update to version 1.3 on disk 309. New features include a "tiny" version, a working case construct, support for resident commands, smaller and faster external commands, and more. Binary only. Author: Steve Koren
Softfont	Converts portrait soft fonts for HP LaserJet compatible laser printers to landscape format. This is an update to FF327. Includes source. Author: Thomas Lynch

Fred Fish Disk 343

SnakePit	A simple, yet addictive game in which you must get the snake (you) off of the screen. There are, however, some rough spots and some obstacles that may need to be overcome. Excellent example of a game that is as system friendly as possible (with source). By: Michael Sinz
SoftSpan	Soft Span BBS program. Intuitive, command-line based menu system with message bases, up/down loads, file credit system, extensive help system, etc. This is shareware version 1.0, binary only, lattice C source code available from the author. Author: Mark Wolfskehl
StockBroker	A program that helps you follow the recent table of exchange from one (or more) share(s). But of course you must tell the Amiga the recent table of exchange every day. Requires AmigaBASIC. Binary only. Author: Michael Hanelt

Fred Fish Disk 344

Keyboard	Functions to translate RAWKEY Intuition messages into usable keycodes. Translation into Modula-2 of C source (by Fabbian G. Dufoe, III) on disk 291. Version 1.0. Includes source. Author: Fabbian G. Dufoe III, Peter Graham Evans
RKMCompanion	A two disk set of material created by Commodore for use with the 1.3 revison of the Amiga ROM Kernel Reference Manual, Libraries and Devices, published by Addison-Wesley. Almost 300 files, including C source code examples and executables, have been packed into two lharc archives, one for each disk of the two disk set. These examples are not public domain, but may be used and distributed under the conditions specified in the copyrights. Author: Commodore Business Machines, Inc.

Fred Fish Disk 345

CRobots	A game based on computer programming. Unlike arcade type games which require human input controlling some object, all strategy in CRobots is condensed into a C language program that you design and write, to control a robot whose mission is to seek out, track, and destroy other robots, each running different programs. All robots are equally equipped, and up to four may compete at once. This is version 2.3w, an update to FF331. Binary only, source available from author. Author: Tom Poindexter, Amiga version by David Wright
Du	Prints number of disc blocks used in selected files or directories. Modified from original version on disk 48 to make output more readable, and handle ^C exit. Includes source. By: Joe Mueller, enhancements by Gary Duncan
GetImage	An enhanced version of "gi" from disk 14. It now looks for the GRAB marker, in the brush file, instead of assuming that it is at a specific place, sets up the PlanePick value in the Image structure, and deletes any unused bitplanes to save memory and disk space. Includes source. Author: Mike Farren, enhancements by Chuck Brand
MemFrag	Displays number of memory chunks/sizes to show memory fragmentation. Chunks are displayed as 2**N bytes which is a rough guide but still useful. This is an enhanced version of "Frags" from disk 69. Includes source. By: Mike Meyer, enhancements by Gary Duncan
Roses	A program that draws sine roses. Implements an algorithm given in the article "A Rose is a Rose ..." by Peter M. Maurer in American Mathematical Monthly, Vol 94, No. 7, 1987, p 631. A sine rose is a graph of the polar equation "r = sin(n*d)" for various values of n and d. Author: Carmen Artino
Unshar	This program extracts files from Unix shar archives. It scores over similar programs by being small and fast, handling extraction of subdirectories, recognising a wide variety of 'sed' and 'cat' shar formats, and handling large files spread across several shar files. This is version 1.3, an update to the version on disk 287. Includes C source. Author: Eddy Carroll
VcEd	A Voice (Tone) Editor for the Yamaha 4 Operator series synthesizers. Binary only, source available from author. Author: Chuck Brand
X2X	Cross converts between Motorola/Intel/Tektronix ASCII-hex files. These files are typically used for down-line-loading into EPROMS, or for transmission where binary files cause chaos. Handles S1, S2, S3, INTEL (inc USBA records), Tektronix (inc extended). Source included. Author: Gary Duncan.

Fred Fish Disk 346

Az	A nice little text editor that is fast, simple to use, and very Amiga'ized. This is version 1.50, an update to FF 228, with lots of new features, bug fixes, and other improvements. Binary only. By: Jean-Michel Forgeas
CassEti	Cassette tape label printer. Includes source in GFA Basic. Author: Thorsten Ludwig
FME	Patch to AllocMem() to allow badly designed programs which request fast mem without necessity to be run on 512k machines. Includes source in assembler. Author: Holger Lubitz
GoWB	Very small (296 bytes) and effective replacement for the well known "LoadWB" and "EndCLI" command pair. This release fixes a severe bug in the first version which used to guru if run out of a script. Includes source in C. Author: Oliver Wagner
PacketSupport	A link library, for use with Lattice C, providing a few functions to handle DOS packet postage. Includes source. Author: Oliver Wagner
PatchNTSC	OS fix to allow the growing number of PAL display programs to be run on NTSC machines. Will patch the Intuition OpenScreen() function to assure screens with PAL height to be opened in interlace mode. Includes source in assembler. Author: Oliver Wagner
TextPaint	Second major release of the Ansi editor. All major bugs have been fixed, and a bunch of new options have been added, e.g. possibility to reload ansi files or CLI modules, 4 color option, optimized keyboard layout, new drawing modes, right mouse button support (like DeluxePaint) and much more. Binary only, shareware. By: Oliver Wagner
Timetest	Working example to show the time() and gmtime() functions of the Lattice C support library. Includes source in C. Author: Oliver Wagner
WBD	Possibly the smallest utility to set the workbench screen to any depth. Includes source in C. By: Oliver Wagner

Fred Fish Disk 347

Cursor	A 3-pass BASIC Compiler for BASIC programs written in AmigaBASIC, does not yet support all of the BASIC commands but is able to compile itself. This is version 1.0, includes source. Author: Jurgen Forster
Drip	Drip is an arcade style game with 15 floors (levels). You must move along the pipes of each floor and rust them to advance to the next level. Every 3 floors completed will entitle you to a bonus round where extra drips can be won. An extra drip will also be awarded for every 10,000 points. Binary only. Author: Art Skiles

Fred Fish Disk 348

ColorReq	Describes the update to the color.library and has an example program, with source, that demonstrates its use. Author: Dissidents Software
DisEditor	This is a demo of the dissidents shareware text editor. Version 1.1, binary only. Author: Dissidents Software
DisSecretary	This program can be used to file information in a "file cabinet" type environment. It is well suited for jobs such as maintaining a disk catalog, or user group membership, etc. Included is a data file of the library catalog, disks 1 to 310. Version "Wanda", binary only. Author: Dissidents Software
FileIO	Contains updated files for version 1.6 of the dissidents requester library. There is a bug fix to the library as well as a new function. See FF257 for the complete documentation, and examples. By: Dissidents Software
ILBMLib	Contains updated files for the dissidents ilbm.library on FF237, with new lib features and a new library. Also included is a much improved (better organized) doc file, and new C examples that show how to use the library for any kind of IFF file. See FF237 for other examples. Author: Dissidents Software
InstallLibs	A program to copy files to the LIBS: dir of a boot disk. Can be used to create a handy installation program (hard disks especially) for programs that need disk-based libraries. Includes source. By: Dissidents Software
SAMP	An IFF sampled sound format designed for professional music use. It can be used for 16-bit samples, multiple waveforms, etc. Includes a SAMP reader/writer shared library, interface routines, and programming examples. Also includes a program to convert 8SVX to SAMP. Author: Dissidents Software

Fred Fish Disk 349

MED	A music editor much like SoundTracker. A song consists of up to 50 blocks of music, which can be played in any order. Editing features include cut/paste/copy tracks or blocks, changing the vibrato, tempo, crescendo, and note volume. Other features include switching of the low-pass-filter on or off on a per song basis, and a cute little animated pointer of a guy doing "jumping jacks" in time to the music! Version 2.00, an update to version 1.12 on FF255. Now includes full source. Author: Teijo Kinnunen

Fred Fish Disk 350

Icons	A large variety of icons for many uses, of practically every description. Most are animated. By: Bradley W. Schenck
MemMometer	A program that opens a narrow window and graphically displays your memory usage like a gauge. Based on WFrags, by Tomas Rokicki. Version 2.10, includes source. Author: Howard Hull
Stitchery	This shareware program loads in IFF images and creates charted patterns from them for use in counted cross-stitch and other forms of needlework. It requires one megabyte of memory to run, and works best with a good high-resolution printer for printing the patterns. The Stitchery was written with The Director and the Projector is included. Version 1.21. Author: Bradley W. Schenck
TrackUtils	Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source. Author: Eddy Carroll

Fred Fish Disk 351

PDC	Publicly Distributable C (PDC) is a complete C compilation system including a compiler, assembler, linker, librarian, and numerous utilities, documentation files, libraries, and header files. PDC supports many ANSI features including all ANSI preprocessor directives, function prototyping, structure passing and assignment. In addition it supports Lattice C compatible libcall pragmas, precompiled header files, builtin functions, and stack checking code. V3.33 includes source. Byr: Lionel Hummel, Paul Petersen, et al.

Fred Fish Disk 352

MG	Beta version of mg3, including ARexx support. This is probably the most stable beta for the next year, as many new features are going in after this. Amiga-only release. Sources compressed with lharc to fit on the disk. Update toFF147. Author: Mike Meyer, et al.
PrintHandler	A custom PRT: driver which offers easy single sheet support as well as limited data spooling. Version 1.6, an almost entirely rewritten update to FF282. Includes source in 'C'. Author: Olaf Barthel
TreeWalk	File tree walking subroutine designed to be fast, robust, and not use a lot of any critical resource. Includes both a CLI interface to that routine the form of a find-like utility that uses C expressions instead of Unix-like flags, and a program to tell you if directory trees will fit on a given disk, or how many extra blocks you'll need if they won't. Includes source. Update to FF289. Author: Mike Meyer

Fred Fish Disk 353

AztecArp	An Arp package fixed to work with the 5.0 release of the Aztec 'C' compiler. The original Manx support files were incomplete, contained bugs preventing them from working properly and had the wrong linker format. Includes source. Author: Olaf Barthel
CompDisk	A disk compression/disk compression package which was written to be fast and easy to use. Includes an Arp and an Intuition interface. Includes source in 'C'. Author: Olaf Barthel
NorthC	A complete freely redistributable C environment for the Amiga based on the Sozobon Ltd C compiler, Charlie Gibb's assembler, the Software Distillery's linker, and portions from other sources. Steve has pulled everything together and added some enhancements in the process. This is version 1.1, an update to version 1.0 on disk 340. Partial source only. Author: Steve Hawtin, et. al.

Fred Fish Disk 354

FastBlit	A small tool to speed up blitter operations by up to 60%. Version 1.0, binary only. Author: Ralf Thanner
KeyMacro	A keyboard macro program, configurable via a text file, that also supports hotkey program execution. You

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can map up to eight functions to each key, including keys such as cursor keys, the return key, etc. Version 1.4, an update to version 1.0 on disk 325, which fixes the bugs in version 1.0. Includes source in 'C'. Author: Olaf Barthel

MandelMountains A program that renders three-dimensional images of blowups of the Mandelbrot set. Includes several example images. This is version 2.0, an update to version 1.1 on disk 295. Shareware, binary only. Author: Mathias Ortmann

MemGuard MemGuard is a MemWatch like program which has been rewritten in assembly language for maximum speed and efficiency. Unlike MemWatch, MemGuard does not run as task in a dummy loop but rather as a low-level interrupt routine which is capable of trapping memory trashing even before exec might know of it and even while task switching is forbidden. Version IIIa, an update to version III on disk 325, binary only. Author: Ralf Thanner

MXMLib An example Amiga shared library compiled with Aztec 'C' 5.0. This library contains basic support functions employed by programs such as KeyMacro or PrintHandler. In short: mxm.library is the standard MXM system support library. Version 34.14, includes source. Author: Olaf Barthel

Fred Fish Disk 355

Berserker A viruskiller which checks for certain conditions indicating possible virus infection. Different from other programs of this kind, Berserker does not rely on checksums only, it will also check the possible virus behind the altered checksum. Therefore even new viruses with old infection methods can be traced and resident tools are not touched. Includes source in assembly language. Author: Ralf Thanner

ImageEditor A simple to use graphics editor which allows you to draw and save images/sprites as assembler or C source code. Includes IFF support, undo, and an iconify function. Another feature is the small memory usage so you can use multitasking even on a 512K machine. Maximum picture size is 166*58 pixels. This is version 2.4 and includes source. Author: Robert Junghans

LoadImage An IFF ILBM reader that accepts overscanned pictures, allows you to scroll around in the bitmap if the picture is larger than the current display, works on both PAL and NTSC machines, supports color cycling using interrupt code, and supports printing of image portions. Version 1.11, update to version 1.9 on disk 281, includes source. Author: Olaf Barthel

RexxHostLib This is a shared library package to simplify the ARexx host creation/management procedure. Rexx-message parsing is also included making it possible to control ARexx from programs such as AmigaBASIC (can you imagine AmigaBASIC controlling AmigaTeX?). This is version 34.12 which has been recompiled and made a lot shorter using Aztec 'C' 5.0, an update to version 1.6 on disk 325. Includes source. Author: Olaf Barthel

SoundEditor An 8SVX stereo sound file editor written in assembly language for speed and minimum size. Version V.8, binary only. Author: Howard Dortch, Mike Coriell, Matt Gerald

TrackSalve A Trackdisk patch which removes all known bugs, and one unknown so far, and patches the Trackdisk task to allow various enhancements, such as reading good sectors from partially bad tracks, write verification, write protect simulation, auto motor off, auto update and turning off clicking. Other features are MFM-upate and I/O by non- chip buffers. This is version 1.3, an update of version 1.0 on disk 312. Includes source in C and assembler. Author: Dirk Reisig

Tron Another game about the lightcycle race sequence in the science fiction computer film "Tron". One or two players and other options. Written in GFA-BASIC and then com- piled. Version 1.1, binary only. Author: Dirk Hasse

Fred Fish Disk 356

AlgoRhythms An algorithmic composition program that improvises music over a MIDI interface connected to the serial port. A MIDI interface and synthesizer are needed. The music does not have a strong pulse, and does not repeat motifs or melodies, but can be very pretty. Version 1.0 with source in C, and sample data files. Author: Thomas E. Janzen

NComm A communications program based on Comm version 1.34, by DJ James, with lots of very nice enhancements. Also includes several auxiliary programs such as AddCall, CallInfo, GenList, PbConvert, and ReadMail. This is version 1.9, an update to version 1.8 on disk 230. Binary only. Author: DJ James, Daniel Bloch, Torkel Lodberg, et al.

Fred Fish Disk 357

Empire Empire is a multiplayer game of exploration, economics, war, etc, which can last a couple of months. Can be played either on the local keyboard or remotely through a modem. This is version 2.1w, an update to version 1.33w on disk 329. Changes include a client-server system, a chat/CB mode, realtime private player to player messages, and other enhancements. Binary only. Author: Chris Gray, David Wright, Peter Langston

Fred Fish Disk 358

Blob Another screen hack. Makes red drops of slime flow down your screen. Version 1.1, includes source in C. Author: Guido Wegener

OPS5c OPS5c is a compiler for the expert system language OPS5. The compiler takes OPS5 source code as input and creates a C source code file to be compiled to create an executable. Arbitrary C code may be linked with the executable and executed as a result of firing rules. The system's strong point is its speed and as a result it sometimes has large executables and large memory requirements. At least 1 Meg. of memory is suggested. Binaries only for compiler and run-time library. Version 1.08a. Requires a C compiler. Authors: Bernie J. Lofaso, Jr, Dan Miranker and Arun Chandra.

Pipeline A game like the commercial game 'Pipe dream' (Pipe mania). Needs a joystick and PAL display. High scores are saved to disk. Version 1.0, includes source. Author: Andre Wichmann.

ReDate Scans a disk and dates each directory according to the most recent item contained within (not including .info files). Ideal for use after a COPY ALL CLONE, where the directories are CREATED rather than copied and thus lose their date information. Includes source in assembler. Author: Jim Butterfield

RoadRoute Revision of trip planner program to find "best road route" between any two points of travel. The user is encouraged to customize files CITIES and ROADS to suit travel interests. This is version 1.5, an update to the original version on disk 251, and makes provision for very large city menus and itineraries. You might like to use files from disk 328 (Mayes/Delzer). Also includes RoadScan, a checker for RoadRoute files (CITIES and ROADS). Very large files may contain goofs (cities with no roads, the same road entered twice, etc.), or oddities (direct road not as fast as multipoint). These are pointed out, together with areas where users might wish to make economies in the data base. Includes source in C. Author: Jim Butterfield

ScanIFF Scans through an IFF file, identifying the elements. Faster than standard utility IFFCheck since it uses Seek, but does not do IFFCheck's detailed format checking. Intended for use as a "template" from which programmers can code their specific application. For example, an expanded version has been used to extract instrument data from music files. Includes source in assembler. Author: Jim Butterfield

ViewDir A LIST type of utility showing contents of a disk or directory. For directories, shows SIZE. For files, takes a quick look and identifies TYPE if possible. Update to original version on disk 251. Now works with SPAT for pattern matching, and has a small style change. Includes source in assembler. Author: Jim Butterfield

Fred Fish Disk 359

ABridge An interim solution to Anim-5 incompatability problems. Identifies the origin of an Anim-5 file and modifies it to facilitate easy exchange between AniMagic, Videoscape, Animation Station, DPaint III, Animation: Editor(v1.11), The Director, SA4D, Movie2.0, Photon Paint 2.0 and Cel Animator. Fully intuitionalized interface, full ARexx support including a "Find ARexx" option if you start ARexx after running ABridge. This is version 1.0, shareware, binary only. Author: Ron Tarrant, Mythra-mations Animation and Software

DICE Dillon's Integrated C Enviroment. A C frontend, preprocessor, C compiler, assembler, linker, and support libraries. Also includes the editor, dme. Features include ANSI compatibility, many code optimizations, and autoinit routines (user routines called during startup before main is called). This is version 2.02, shareware, binary only. Author: Matthew Dillon

TextPlus A word processor for the Amiga, with both German and English versions. TextPlus enables you to write letters, books, programs etc. in a very easy and comfortable way. Version 2.0, binary only. Author: Martin Steppler

Fred Fish Disk 360

UUCP An implementation of uucp for the Amiga, including mail and news. This is Matt's version for the Amiga, based on William Loftus's Amiga UUCP 0.40 release with news code from his 0.60 release, and months of work by Matt to make fixes and add enhancements. This is version 1.06D, an update to FF313. Includes source. Author: Various, major enhancements by Matt Dillon

Fred Fish Disk 361

Brush_4D Converts IFF images into Sculpt 4D object format. Works with any IFF image, including HAM & Extra Halfbrite. Convert brushes in full color, with optional wrap, to 3D shapes. Also includes optimization routine. V1.00, shareware, binary only.Author: Bruce Thomson

FileMaster A file editor like NewZap or FedUp, which allows you to manipulate bytes of a file. You may also change the file size or execute a patch. V1.20, update FF298, includes source in assembly.Author: Roger Fischlin

TextPaint V0.97 of the Ansi editor. Several significant enhancements and bug fixes since the release of V0.90 on FF346. Binary only.Author: Oliver Wagner

Turn An interesting board game with the simplicity of checkers yet requiring the "move-look ahead" of a good chess player.Binary only.Author: Peter Handel

XColor-Lib Link library with a full-fledged color requestor along with several color functions like copy, spread, exchange, antique black & white, etc. to aid in creating your own custom color requestors. Contains several demos along with include files for C, AmigaBasic, DevPac Assember and KickPascal. Author: Roger Fischlin

Fred Fish Disk 362

ArchEdge Intuition interface for several of the more popular archiving utilities such as ARC, ZOO, LHARC and PAK.Includes an "Auto-Pad" function that will automatically add some morsels for the modem. V1.5, includes assembly source.Author: Robert Lang

Fenster A program which can operate on windows owned by another program, to close them, change their size, refresh gadgets,move the window to the background, etc. This is V2.2, an update to FF305. Includes source in assembly.Author: Roger Fischlin

Imperium_Romanum Strategic, "RISK" style game for up to four players.Based in the ancient times of Rome, Athens, Alexandria and Carthago. Binary only, shareware ($10), with C source available from the author. V1.50E. Author: Roland Richter

KeyMenu Allows fast, easy access to pull-down menus from the keyboard without having to remember all the special amiga key sequences V1.01, binary only.Author: Rainer Salamon

MemRoutines Some "plug-compatible" replacements for the Lattice C functions memcpy(), memcmp(), and memset(). Unlike the Lattice functions that deal with data one-byte at a time, these V s deal with long word chunks, which can improve performance of Amigas equipped with a 68020 or 68030. Includes source in assembly.Author: Robert Broughton

PUZZ Very nice implementation of the sliding-block-puzzle concept. Good graphics and the ability to create your own puzzles using an IFF ILBM file and a text file. Includes source and several sample puzzles. V1.0.Author: Martin Round

Rubik Another 3D Rubik's cube solver independantly authored from the Von disk #285. V1.0, includes source.Author: Martin Round

sMOVIE A smooth scrolling text displayer, useful for creating video titles, slide show intros, etc. Includes source.Author: Martin Round

Fred Fish Disk 363

BootBase Another bootblock save/restore utility. Includes an auto-compare function. Includes source.Author: Steven Lagerweij

LabelPrint3.5 A program that allows you to easily print labels for your disks. This is V3.5, an update to FF277. Shareware, binary only (source available from author).Author: Andreas Krebs

MigaMind A small WorkBench "Master-Mind" type game. Includes source.Author: Ekke Verheul

PLW Phone-Line-Watcher. For users of Hayes compatible modems. Monitors the serial port and records all incoming calls. Current version only allows remote user to receive a predetermined message, login, and leave a reply. Possible updates will allow them access to AmigaDos. V1.1, binary only.Author: Christian Fries

RandSam Plays random sound samples at random times, with random volume, random cycles, and a bit random period. It will definitely catch the attention of the unsuspecting Amiga user (particularly one that has the stereo turned up!) when a lion suddenly roars as they're typing away on their favorite word processor! User modifiable start-up configuration file. Include source and some sample sounds.Author: Steven Lagerweij

SampleScanner By-passes the Amiga Dos file system and scans a disk directly, block by block, for sound samples. Allows you to "hear" the disk as it is being scanned. If a sample is found, it can be saved to disk for editing, direct use, etc.Author: Steven Lagerweij

WO An intuition-based address book that allows saving of data in normal or password-encoded form. V1.0, includes partial source, (password encoding routines not included). Author: Heinzelmann

Fred Fish Disk 364

Aniptrs2 Some more animated pointers to choose from to "liven"up your display environment. Binary only. Author: Bob McKain, pointer animation program by Tim Kemp

DPFFT Update to FF324. DPFFT includes the ability to plot a Fast Fourier Transform (FFT) of the data, customized amplitude and phase spectrum, prewhitening capability, and a Welch window for spectral smoothing.V2.2, binary only.Author: A. A. Walma

Iconaholism A selection of some very nice looking icons designed for an 8-color WorkBench. Includes script files to view the icons in their intended colors. Author: R.G.Tambash

MemLook Similar to "MemFlick" on FF206. For lack of a better explanation, it gives sort of a graphical view of your machine's entire memory area. Features memory guage and controllable scrolling speed via the cursor keys.V1.1B, binary only, source available from author. Author: Thomas Jansen

SNAG_Pointers Results of the Southern Nevada Amiga Groups (SNAG) first animated pointer contest. Authors: Various, pointer animation program by Tim Kemp

Fred Fish Disk 365

Badger Reminder program for your startup-sequence. Badger will open a window and display any important events that are 'due'. Badger will not bother you if there is nothing to report. Events are entered via menu and prompts. Binaryonly, shareware.Author: George Kerber

DmeAsm A utility for those who use Matt Dillon's Dme editor and HighSoft's DevPac Assembler. DmeAsm is a CLI command file that takes your source code as a parameter and opens a window similar to the Assemble window inside Devpac (Genam2) and gives similar options. If no parameter is supplied then the window will still open and you can supply your own. V 1.1, includes source in assembly Author: Nic Wilson & W Weber

EasyBackup A CLI-based hard-disk backup/restore utility. Features incremental backups by archive bit status, by date stamp, or command-line query. Incremental backups can be appended to an existing backup set. Includes source. Author: Oliver Enseling

EasyMouse Another threshhold-mouse-accelerating, screen-to-back, window to-front, mouse-blanking, screen-blanking, auto-window activating, low-memory-warning, auto-window sizing, configuration-saveable clock! V1.0, includes source.Author: Oliver Enseling

TrackDos A program that allows easy transfer of data between DOS, memory and trackdisk.device. DOS means the data contained within a file, memory means the data contained anywhere within the memory map and trackdisk.device means data stored on a disk not accessable with DOS (eg. bootblocks special loader disks etc.). The transfer of data between these three areas is not normally easy or convenient. TrackDos was written to overcome this. Binary only.Author: Nic Wilson

Password A program which enhances your computers security by making it complicated enough that users without your password will get discouraged trying to boot and use your system. This should keep out most casual or nontechnical users. Update to FF243. V1.42p, binary only.Author: George Kerber

Udate Udate is a replacement for the AmigaDOS date command, containing many options similiar to the UNIX date command. Udate will allow you to set the date and time via prompts or directly from the command line, will display any part of the date or time using the options in any color desired, and will also make an automatic adjustment of your system clock for Daylight Savings Time so your computer will be one less clock you will ever have to set twice a year for DST. Update to FF311, this version is slightly smaller and works correctly with the 68030. V1.14c, binary only.Author: George Kerber

View80 Very impressive scrolling text file reader. Three scrolling modes and controllable via keyboard or mouse. Opens file requestor if no filename is given. Automatically configures screen size for PAL or NTSC machine. Sample operation in reading the document files. V1.1, includes source. Author: Federico Giannici

Fred Fish Disk 366

3DTicTacToe A three-dimensional "four-in-a-row" V of TicTacToe, human against computer. V1.2, binary only. Author: Ron Charlton

DosError A small CLI utility that will return a slightly more verbose description of a DOS error code than that returned by the System. Can save a trip to the manual for vague or unfamiliar error codes. V2.0, includes source in assembly.Author: Robert Lang

IntuiFace An intuition interface that handles the important functions of creating, inserting, extracting and listing files for three popular archiving utilities: ARC, ZOO and LHARC.V1.00, binary only, shareware.Author: Matthias Zepf

LoanCalc Entirely keyboard driven mortgage utility. Although similiar programs exist, this one is unique in that it is designed to track 'Open' mortgages that allow any size payment to be made at any time as well as providing an amortization table for fixed mortgages with monthly, semi-monthly, bi-weekly andweekly payment schedules. V1.2, binary only. Author: Robert Bromley

PhoneWord takes a full or partial telephone number and attempts to create a word from the various "alphabedigit" combinations. Includes source.Author: Ron Charlton

Unjumble may be useful in solving the Sunday morning newspaper "Scramble". Includes source.Author: Ron Charlton

MeMeter A small utility for monitoring the Amiga's memory usage. Unique snapshot facility allows you to store the current numbers, launch a program, see how much memory it requires, end the program, and see if it returns all the memory. V2.1, binary only. Author: Gaylan Wallis

NDebt Amusing, but saddening, this program opens a small window that displays a continuously updated tally of America's national debt, based on its historically phenomenal growth rate. V1.1, includes source. Author: Ron Charlton

PrintStudio Very nice intuition-based general purpose print utility that prints text with a variety of options. Prints several graphic formats with yet more options. Print any part of a picture, print screens and windows, save screens and windows as IFF files, modify color palettes, change printing parameters and lots more! V1.2, binary only, shareware. Author: Andreas Krebs

Fred Fish Disk 367

Enigmas Nifty graphic simulation of the World War II German Enigma-Machine, a message encoding/decoding device that produced extremely difficult to crack cryptographic code. Binary only. Author: Gaylan Wallis

GwPrint An intuition-based text file print utility. Offers a wide selection of adjustable features for controlling pagination, headers, trailers, margins, date and page-numbering and various print styles/sizes. V2.0, binary only, shareware. Author: Gaylan Wallis

HyperDialer Database for names and addresses, full intuition interface Dynamically allocated, with configurable script startup file.Iconifies to titlebar icon. Search, sort, insert, delete, full file requesters. Uses modem to control dialing of multiple phone numbers. Binary only, shareware, with source available from author. Author: David Plummer

SCM Screen Color Modifier. A palette program that allows the changing/saving/loading of a screen's colors. Includes a separate loader program that can be used in batch files to set a screen's colors to predefined values after a program has been launched. V1.0, binary only.Author: Jean-Marc Nogier

SuperView A shareware file-viewer that displays all types of IFF files with many features like: Workbench support, all display modes, auto overscan, color cycle (CRNG, CCRT), AmigaBasic ACBM files, first cell in and ANIM file, Type 5 animations and more. Written in assembly, pure code for residency under 1.3. V3.0, binary only.Author: David Grothe

Tricky Another of Peter's innovative and addictive games. Sort of a "video-bowling" concept where the object is to wipe out groups of "computerized" symbols in such a fashion that the last item hit becomes the target for the next ball (with a few tricks of course!). Lots of levels and the usual level editor that accompanies most of Peter's games. Binary only.Author: Peter Handel

Fred Fish Disk 368

Elements Very nice interactive display of the the Periodic Table of Elements. This is V2.0, an update to FF297. This version adds general row and column information, plus a test mode where the program asks specific questions about the selected element or row/column. Binary only, shareware. Author: Paul Thomas Miller

GraphicsPak A set of functions for general graphics operations such as boxes/lines, blitting, and opening/closing the libraries. It is used by both of the PopMenu and ListWindow test programs. Includes source.Author: Paul Thomas Miller

Lila A shareware utility that allows you to print listings or other text files on Postscript printers, with header, page numbers, and multicolumn pages. Can print in portrait or landscape orientation. V8912a, binary only. By Bertrand Gros

ListWindow Gives simple initialization, handling, and free-

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The Memory Location

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2232 Multi-Serial port card
1950 Multisync Monitor
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Mi Graph Hand Scanner
Sharp JX-300 Color Scanner
Sharp JX-100 Color Scanner
Xapshot still video camera
Canon RP-420 Video printer
Gold Disk Office
Disney Animation Studio
BibleReader
Amax II
Home Front
Wings
Shadow of the Beast II
Black Gold
Heart of the Dragon
Pool of Radiance
Check Mate
Over Run
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ing of Macintosh-like "list-windows." These are user-sizeable windows with a scrollable list of text strings, optionally sortable. The list can be scrolled with a scroll-bar, up and down arrows, arrow keys, or a SHIFT+key combination which searches for the first occurance of the specified key. Source and a sample program included.Author: Paul Thomas Miller

NewEx	An assembly program to replace xicon, IconX and similar utilities. Unique in the fact that it uses a WorkBench "Tool" icon instead of a "Project" icon. This allows workbench startup of programs that could ordinarily only be started by the CLI. V1.1, includes assembly source.Author: Kjell Cederfeldt
PopMenu	A set of functions for the setting up, drawing, and handling of pop-up menus that are affixed to windows. Clicking on the menu box area will open up the full menu, with the list of menu items inside. Source and a sample program included. Author: Paul Thomas Miller
SuperMenu	An information display system you can use to quickly and easily display text files (and sections of text files) with the press of a button. V2.0, shareware, binary only.Author: Paul Thomas Miller
SysInfo	A program which reports interesting information about the configuration of your machine, including some speed comparisons with other configurations, versions of the OS software, etc. V1.4, binary only.By Nic Wilson
Today	Amiga implementation of IBM PL/1 history program. Tells you important events and birthdays on current or specified day. Command line options include once-per-day setting for startup sequences. V0.91, binary only, shareware.Author: David Plummer, data files originally from an IBM VM/CMS version by Mike Butler

Fred Fish Disk 369

AQData	Information to aid users in updating B. Lennart Olsson's Aquarium V1.12 database. Includes information on disks up to number 360. Author: Howard Hull
Flip	Another program in the long tradition of screen hacks. Run it and see what happens. Binary only.Author: Andreas Schildbach
Fortune	Randomly display a 'fortune' selected from a fortunes file (supplied), by text or voice. New version will work from the Workbench or CLI. V2.04g, update to FF311, source included. Author: George Kerber
Spy	A program that tracks calls to AmigaDOS and Exec functions, reporting them to the screen, along with their calling parameters and the results. V1.0, includes source.Author: Federico Giannici
VAXterm	A VT220 terminal emulator that is close to the real VT220 terminal in both supported facilities and user interface. Designed primarily for connection to VAX/VMS, it should work with any host computer with VT220 terminal support. Supports file transferring for ASCII files by means of DCL commands. V2.4, includes source. Author: Tuomo Mickelsson
XprTransmit	XprTransmit is a Cli-based command that allows you to easily access to any Xpr Library without having to worry about call-back-function et cetera. It is able to access every "serial.device"-like exec-device. Only little documentation. V1.0, binary only.Author: Andreas Schildbach

Fred Fish Disk 370

SKsh	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V1.5, an update to FF342. New features include user definable keymaps, an ARexx port, many new internal and external commands, selective disabling of wildcards, preparsing of script files, bug fixes, and more.Author: Steve Koren

To Be Continued......

In Conclusion

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(*Keyboard Input*, *continued from page 86*)

```
DR6   moveq    #$30,d2
      and.b    d0,d2
      beq.s    DR7
      bset.l   #10,d1   ;set Alt bit
   ;-Check for Ctrl
DR7   btst.l   #3,d0
      beq.s    DR8
      bset.l   #11,d1   ;set Ctrl bit
   ;-Check for Amiga
DR8   andi.b   #$C0,d0
      beq.s    DR9
      bset.l   #12,d1   ;set Amiga bit
DR9   move.b   (a1),d1  ;get low byte
      move.l   (sp)+,d2
      move.l   d1,d0
      rts
;-0 means "ignore this key press"
NoKey moveq    #0,d0
      rts
;=====================================
; Not a Function, Cursor, or HELP key.
; Have console dev. convert to ascii.
RegKey:
   ;-Allocate/Zero an input event block
      move.l   a2,-(sp)
      moveq    #11-1,d1  ;22 bytes
clrev clr.w    -(sp)
      dbra     d1,clrev
DR10  movea.l  sp,a0
      addq.l   #4,a0
      bset.b   #0,(a0)  ;class = RAWKEY
      addq.l   #2,a0
      move.w   a1,(a0)+
      move.w   d0,(a0)
DR11  movea.l  sp,a0
DR12  subq.l   #2,sp    ;the storage buffer
      movea.l  sp,a1
      moveq    #1,d1    ;buffer length
      suba.l   a2,a2    ;use default keymap
      movea.l  _ConsoleBase,a6
      jsr      _LVORawKeyConvert(a6)
DR13  addq.l   #1,d0
      beq.s    keyno    ;If overflow, ignore
DR14  movea.l  sp,a0
      moveq    #0,d0
      move.b   (a0),d0  ;get ascii byte
;-restore stack
keyno moveq    #24,d1
      adda.l   d1,sp
      movea.l  (sp)+,a2
      move.l   d0,d1    ;set Z flag if
      rts               ;we got a key

   SECTION  rawkeyData,DATA

_ConsoleBase   dc.l  0

;lookup table for Function, Cursor,
;HELP keys
ExtraKeys    dc.b $0A,$0B,$0C,$0D
             dc.b $00,$01,$02,$03
             dc.b $04,$05,$06,$07
             dc.b $08,$09,0,0,0,0,0
             dc.b $0e

SpecialMsgs:
   dc.l  FU1,FU2,FU3,FU4,FU5
   dc.l  FU6,FU7,FU8,FU9,FU10
   dc.l  UP,DOWN,RIGHT,LEFT
   dc.l  HELP

FU1          dc.b 'F1    '
FU2          dc.b 'F2    '
FU3          dc.b 'F3    '
FU4          dc.b 'F4    '
FU5          dc.b 'F5    '
FU6          dc.b 'F6    '
FU7          dc.b 'F7    '
FU8          dc.b 'F8    '
FU9          dc.b 'F9    '
FU10         dc.b 'F10   '
UP           dc.b 'Up    '
DOWN         dc.b 'Down  '
LEFT         dc.b 'Left  '
RIGHT        dc.b 'Right'
HELP         dc.b 'Help  '
SHIFTmsg     dc.b 'Shift  '
ALTmsg       dc.b 'Alt    '
AMIGAmsg     dc.b 'Amiga  '
PLAINmsg     dc.b 'Plain  '
CTRLmsg      dc.b 'CTRL   '
ConsoleName dc.b 'console.device',0
asciiBuffer dc.b 0
```

•AC•

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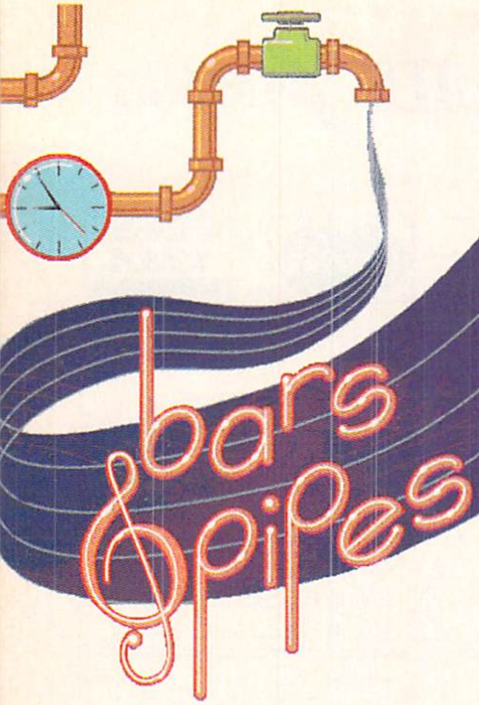

If you haven't already heard, the 1996 Summer Olympic games will be held in Atlanta, GA. And Blue Ribbon Bakery and company president Melissa Jordan Grey played a key role in the city's vying for this prestigious honor by creating the score for Atlanta's presentation. While working on the presentation, Blue Ribbon Bakery developed the Multi-Media Kit and MusicBox B, two newly released tools designed to work with the company's Bars&Pipes.

Multi-Media Kit

Blue Ribbon Bakery's Multi-Media Kit allows you to combine your music with other Amiga applications such as Elan Performer, Deluxe Video III, AmigaVision, and more. Combined with Bars&Pipes (you need Bars&Pipes to run Multi-Media Kit), you can communicate with other programs and exchange instructions quickly and easily.

The Multi-Media Kit includes five tools and accessories to work with: ARexx, Bars&Pipes MIDI Player, Bars&Pipes MIDI Recorder, Cue Card, and SMoose. Bars&Pipes MIDI Player and Bars&Pipes MIDI Recoder were both used extensively in the creation of Atlanta's presentation score.

Multi-Media Kit comes in a temporar package. Simply insert the included manua sheets into your Bars&Pipes binder. Each too and accessory is explained in the manual sheet with easy-to-understand examples.

MusicBox B

MusicBox B, the second in a series o MusicBox collections, is filled with tools an accessories that work to add more power t Bars&Pipes.

MusicBox B is also comes in a temporar package. Just remove the included manual sheet and add them to your Bars&Pipes manual.

MusicBox B comes with thirteen tools an accessories—Alternator, Chord Player, Dis Jockey, Notepad, and Volume are just a few. Eac is explained in the manual sheets provided. Th Volume tool was also used a good deal in th creation of the Atlanta presentation score.

Multi-Media Kit: $59.95
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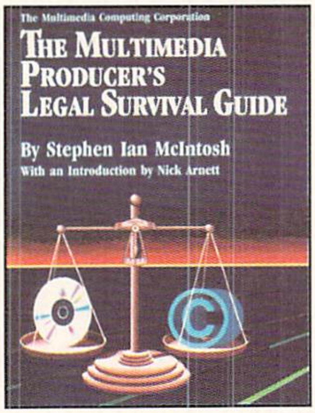
Multimedia Professionals

Multimedia Computing Corp. (MCC) has developed workbooks, manuals, trade shows, and two newsletters specifically designed to assist the growing number of multimedia professionals. Established in October 1988, MCC has created over a dozen publications and "How-To" books.

Multimedia Computing and Presentations is a monthly newsletter for multimedia professionals on market and product strategies ($295/year; $395 overseas). Mind Over Media is a How-To report on interactive multimedia productions (price unavailable), published twice a month.


The Multimedia Computing Corporation
THE MULTIMEDIA PRODUCER'S LEGAL SURVIVAL GUIDE
By Stephen Ian McIntosh
With an Introduction by Nick Arnett

MCC was a contributing producer of the Computer-Aided Multimedia Presentations (CAMMP) show held in New York this past September (see the article on page 57 of this issue). CAMMP shows have also been scheduled for such cities as San Francisco, Los Angeles, Chicago, and Orlando.

With How-To books on user interface design, desktop video, hypertext, and interactive videodisk design, MCC has secured their position as a valuable multimedia resource. All of these publications are available directly from MCC.

Perhaps their best product is The Multimedia Producer's Survival Guide. This large binder and disk edition is a great tool for the small multimedia developer. There are over 206 pages of forms and instructions on how to legally protect your work. From information on copyrights and trademarks to the structure of contract and agreements, this publication takes the reader through the labyrinth of legal terms and conditions. While this is not a substitute for a lawyer, it will provide the necessary understanding of which questions should be asked of your attorney during the creation of legal documents ($250 temporarily).

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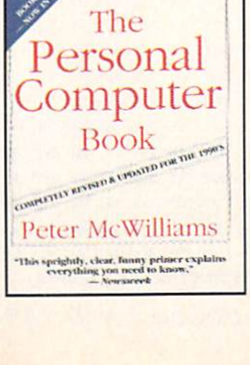
Buyer Beware!

"A little knowledge is a dangerous thing." Rarely has this saying been so appropriate as when referring to Peter McWilliams' latest effort, *The Personal Computer Book.* Published by McWilliams' own Prelude Press, this large volume (it is actually a combined, updated version of several of McWilliams' previous books) contains just enough facts to appear authoritative and more than enough misinformation to b dangerous.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The Personal Computer Book
COMPLETELY REVISED & UPDATED FOR THE 1990'S
Peter McWilliams
"This sprightly, clear, funny primer explains everything you need to know."
—Newsweek

Although labeled as a book for the beginne through the use of numerous quotes from som major publications and well-known personalities *The Personal Computer Book* ponderously avoid any real discussion in pursuit of quick jokes an old engravings from the public domain McWilliams is so involved with trying to amus that the few credible observations he does mak (yes, there are a lonesome few) are lost among th reams of misinformation.

In a chapter entitled, appropriately enough "An Incomplete and No Doubt Inaccurat History of Personal Computers...," McWilliam states, "Today, the only players not up to th "standard" IBM standard are Apple (with it Macintosh), Commodore (with the Amiga), Atari and, ironically, IBM. (The IBM line is no software compatible, but not hardwar compatible, with the standard IBM itself create in 1983.)"

McWilliams goes on to say, "The bottom line If it's not IBM-compatible, it's probably not wort it." Since the Amiga is mentioned only once i 672 pages, McWilliams is certainly unaware of th computer industry. Forsaking all others, h upholds the IBM clones as the best choice fo anyone. Period.

McWilliams, while dedicating less than thre pages to the topic of computer graphics, manage to spend 132 pages describing his McWilliams I Word Processor. The McWilliams II is your basi wooden pencil.

Yes, McWilliams is the author of the bes seller, *Life 101: Everything We Wish We Ha Learned About Life In School — But Didn't.* Mr McWilliams' cavalier attitude and unusual styl may be appropriate for some subjects, but it i sadly misplaced when presented as a source fo novice computer users.

• AC •

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[1] With standard Amiga 1080, 1084,1084D and 1084S monitors. Other monitors may require special cabling.

[2] Resolutions slightly higher in PAL version.

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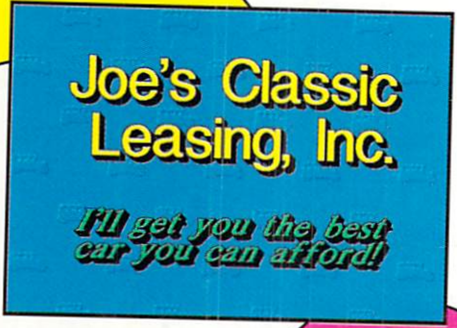
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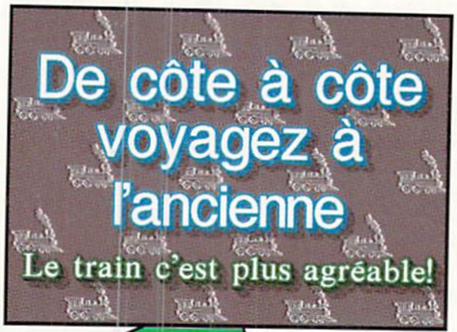
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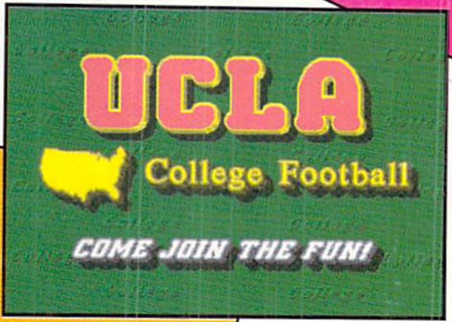

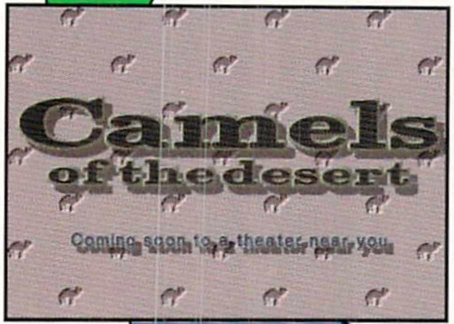

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